1995 IntelliQuest Business Influencer Study finds:

Computerworld reaches more purchase influencers than InformationWeek in all major product areas

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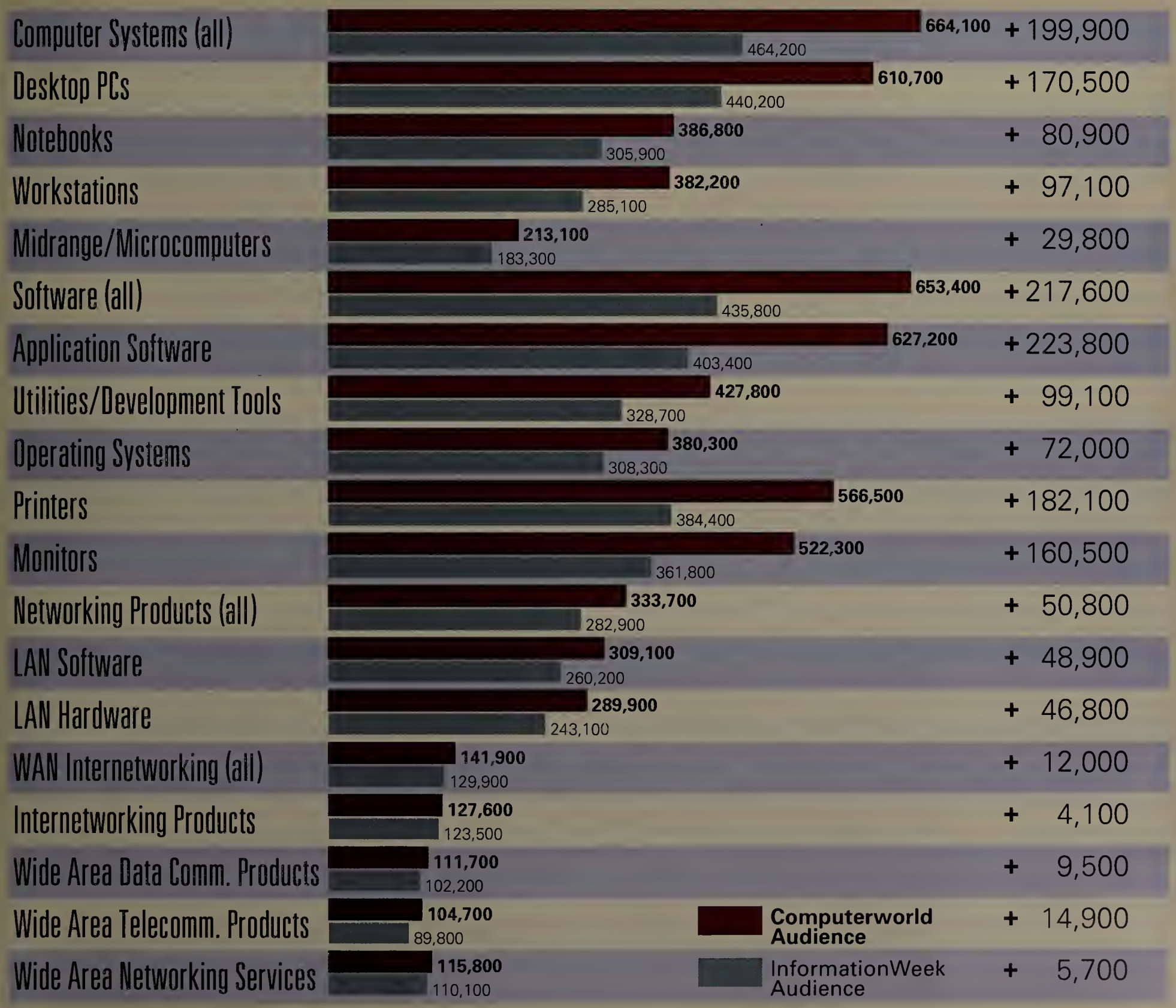

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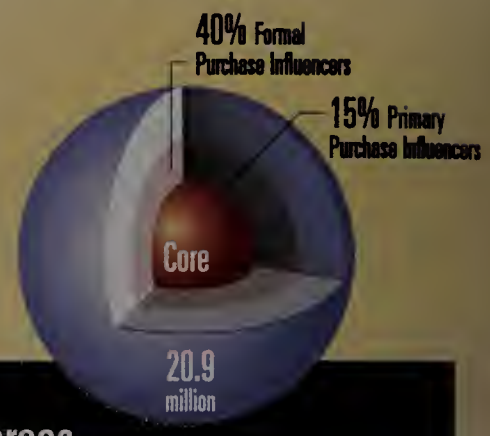
1995 IntelliQuest Business Influencer Study Finds 20.9 Million IT Purchase Influencers in U.S.– 40% are Defined as Formal and 15% as Primary Purchase Influencers.



Computerworld reaches more purchase influencers than InformationWeek in all major product areas

Formal Purchase Influencers

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IntelliQuest Confirms COMPUTERWORLD Reaches Purchase Influencers

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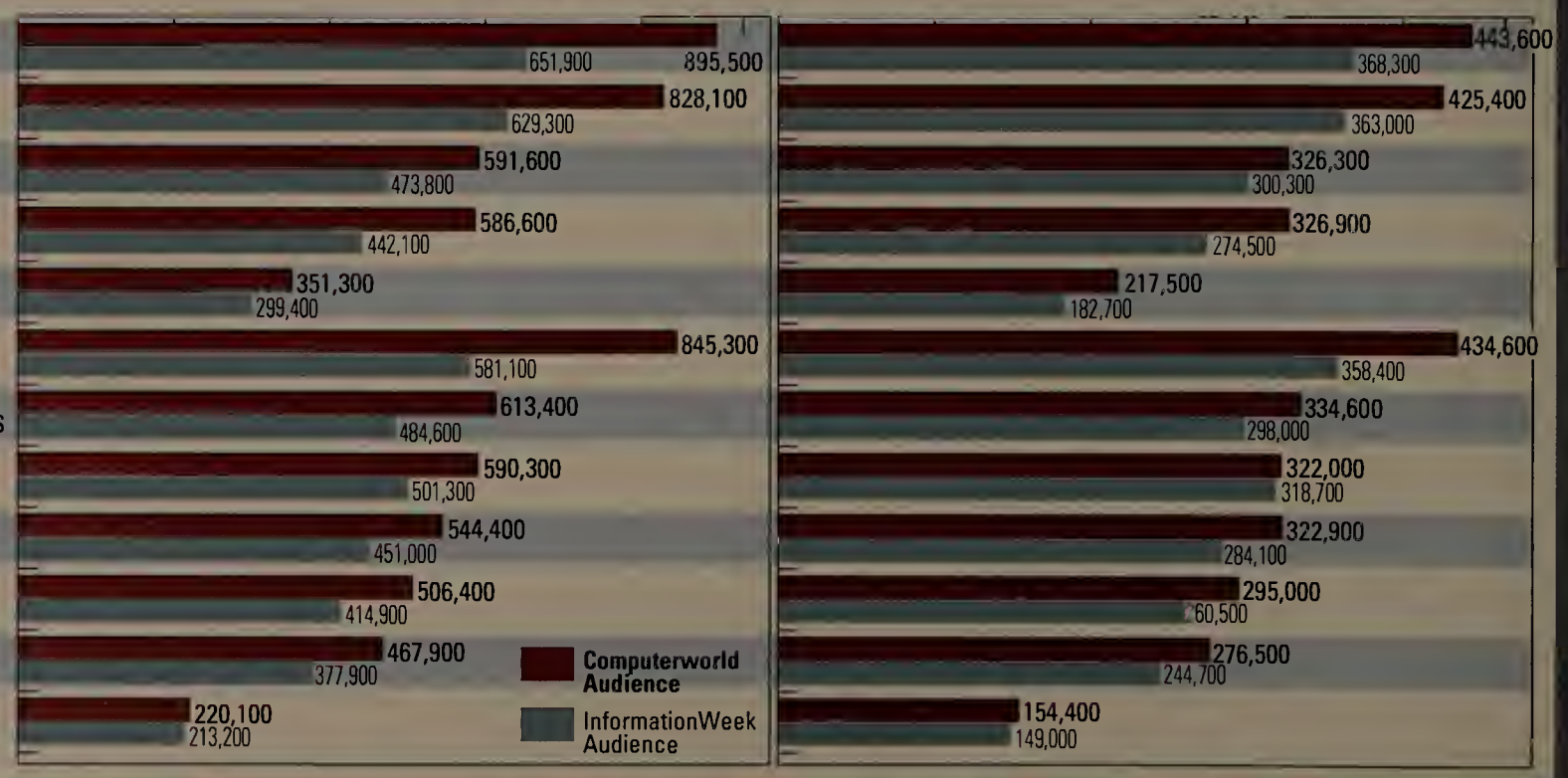

COMPUTERWORLD
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The Newspaper of Information Systems Management
August 21, 1995, Vol. 29, No. 34, 134 Pages, $6/Copy, $48/Year

COMPUTERWORLD

MVS bundling to cut S/390 costs

IBM simplifies operating system by building in auxiliary systems

By Craig Stedman
ORLANDO, FLA.

Hoping to make MVS a load-and-go operating system akin to server rivals such as Unix and Microsoft Corp. Windows NT, IBM is moving to bundle the mainframe software with about two dozen supporting products. Until now, users have had to buy and install those products separately.

The bundling strategy should result in lower software costs for System/390 customers, although IBM said last week it hadn't finalized pricing.

The move, which is expected to be announced within 60 days, is also aimed at making it easier to order and install MVS and critical auxiliary software that virtually all mainframe shops must use with the operating system.

IBM officials at last week's Share, Inc. user group conference here wouldn't specify which products will be bundled

MVS, *page 109*

Win 95 trips 1-2-3

Lotus to ship new SmartSuite with Win 3.1 spreadsheet release

By Lisa Picarille

Don't look for a Windows 95 version of Lotus Development Corp.'s 1-2-3 spreadsheet any time soon.

To quickly push a Windows 95 version of its SmartSuite application set into the market, Lotus will ship SmartSuite with a Windows 3.1 version of 1-2-3, according to sources briefed by the company. The other suite components have been successfully ported to Windows 95.

Lotus will include in the SmartSuite package a coupon that lets users get 1-2-3 for Windows 95 when it is released. The ported spreadsheet is slated to go into beta testing in October. General availability isn't expected until the first quarter of next year, according to sources close to the Cambridge, Mass., developer.

Lotus declined to comment.

Observers said the delay of 1-2-3 for Windows 95 could also adversely affect the Windows 95 release of NotesSuite. This package is supposed to provide workflow links between 1-2-3 and Notes so that users can track sales activities and revenue forecasts between the two applications. NotesSuite is due this fall.

This isn't the first delay for 1-2-3. Lotus' former cash cow has been plagued by setbacks ever since the firm attempted to move the popular DOS spreadsheet to the Windows platform. This latest snafu is no exception, observers said.

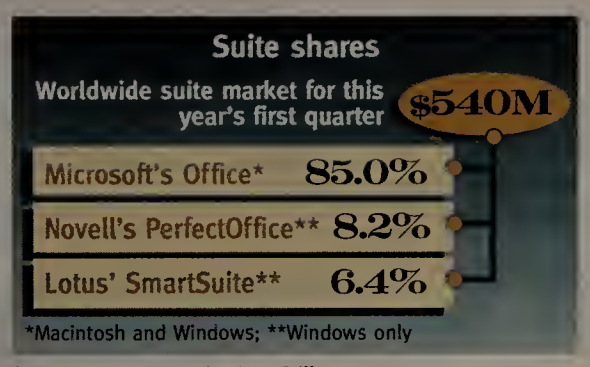
"This is a major embarrassment," said Jeffrey Tarter, editor of "Soft Letter," an industry newsletter in Watertown, Mass. "I would say this is on par with walking down Main Street at high noon wearing no pants. This is not just

Lotus, *page 14*

Microsoft Windows 95

Under the Windows 95 big top in this issue:

- Product launch roundup, PC maker plans and 32-bit applications. **Pages 14, 15**
- Special Windows supplement, including reviews and resources tip sheet. **Page 37**
- Training tips. **Page 85**
- Stock market impact. **Page 107**



Source: Dataquest, Inc., San Jose, Calif.

Groupware gangbusters

Oracle weaves Web links

By Kim S. Nash

Already more than a year late with its groupware suite, Oracle Corp. is nonetheless hopeful that it can still end-run market leader Notes with a set of workgroup products linked via the World Wide Web.

Specifically, Oracle will announce on Sept. 18, at the opening of its annual user group meet-

Oracle, *page 109*

Group-wary

The Oracle Groupware suite is more than a year late, but beta users predict it will be worth the wait

Suite component	Availability
Office E-mail	Now
Calendar scheduling	Now
Document manager	By year's end
Workflow manager	Early 1996

DEC to challenge Exchange

By Suruchi Mohan

Digital Equipment Corp. last week confirmed it is working on a multiplatform messaging product that would go head-to-head with ally Microsoft Corp.'s yet-to-be-released Exchange Server.

Code-named OfficeServer, the forthcoming messaging platform could be a contender at the large corporations that Microsoft covets and Digital holds sway over. But Digital is shooting for a June 1996 delivery date. Exchange is expected by the end of this year.

Friends or foes?

The timing of the project is especially intriguing because Digital and Microsoft announced earlier this month that they would work together on the messaging front. Digital had said it would offer its MailWorks and All-In-1 users a migration path to Exchange.

OfficeServer will incorporate key features from Digital's mail products, including file cabinet and server-based conversion. The file cabinet feature is similar to the file manager in Windows, except that each document has a

DEC, *page 12*

Voice hitches a free ride on stretched frame relay

By Bob Wallace

A trio of networking equipment vendors are prepping the first group of products that will enable users to send voice traffic and data over public frame-relay networks, adding a new dimension to the carrier service.

Public networks

Frame relay was designed primarily to support data transmitted in bursts between far-flung LANs, but equipment due from ACT Networks, Inc. and Memotec Corp. will help users squeeze even more traffic onto the carrier service. Micom Communications Corp. announced its gear last week.

Users who generate sporadic voice traffic stand to save money because frame-relay networks were originally cost-justified for data applications. When they carry voice as well, it gets a free ride.

Users "should take a long, hard look" at this approach because it can save them money, said Christine Heckart, a broadband consultant at TeleChoice, Inc., a Verona, N.J., consultancy. "You'll see more products soon."

"We've estimated [voice] savings of $3,000 a month on our nine-office frame-relay network," said Ken Lund, president of Allen Lund Co. in La Canada, Calif. The firm uses products from Micom to run

Frame relay, *page 109*

Newspaper

Inside Computerworld

August 21, 1995

News

4 ATM migration
Ascom-Timeplex readies a migration path from time division multiplexed networks to ATM; Novell prepares to announce ATM access through NetWare.

4 Cabletron to update Spectrum
Cabletron will link up with Computer Associates and other vendors to bolster lagging systems management support for Cabletron's Spectrum enterprise network management platform.

6 PC pricing skirmish
Compaq, IBM and Hewlett-Packard cut prices on corporate desktops.

8 Encryption to increase
The White House relaxes export rules on encryption products as software succumbs to attacks.

12 Virus vaccine
IBM's famed research labs are concocting a plan to boost the PC's virus immune system.

16 Hewlett-Packard user group meets
HP CEO Lew Platt tells how the company will invest for future growth and boost its 3000 lines. Meanwhile, users express unhappiness with HP's sales force.

24 ISDN
3Com adds features to its Impact ISDN modem that will improve high-speed data links and allow it to interoperate with the huge installed base of analog modems.

OPINION

33 Reusable code
IS gives lip service to reusable software but doesn't reward programmers for actually writing it, Michael Schrage says.

73 Outsourcing
Management guru Paul Strassmann says outsourcing is for losers.

COMPUTER INDUSTRY

23 PDA problems
Motorola makes cuts in its wireless data group, a sign that the personal digital assistant market is growing even more slowly than expected.

7-Eleven Japan replenishes its shelves every eight hours. *Japan's Kao Corp. fills orders to 280,000 retailers in 24 hours or less. Their success is in how they apply information technology.* **Leadership Series, following page 32.**

Choice Cuts

Special Windows 95 section: *Training may be harder for some users, and compatibility with 16-bit applications may not be what you think. Get your resources here.* **Desktop Computing, page 37.**

Microsoft Windows 95

The flame wars can get nasty, and there's no shortage of creeps, *but women in IS who use the Internet for business say they can't live without it.* **In Depth, page 81.**

Technical Sections

WORKGROUP COMPUTING

43 Sun update
Sun plans to overcome three years of lagging workstation performance by introducing units based on a 64-bit UltraSPARC chip later this year. Users and analysts said the souped-up workstations will help Sun hold onto its dominance of the worldwide workstation market.

44 From Unix to NT
Unix software vendors are beginning to port key client/server applications to Microsoft's Windows NT.

ENTERPRISE NETWORKING

49 Internetwork performance booster
Bolt Beranek and Newman introduces a software package that gives users better performance while cutting costs.

49 Street talk
The New York City Department of Transportation uses Banyan's Vines to untangle the city's streets.

52 Banking on the Internet
Bank of America and Wells Fargo Bank approach the Internet from completely different points of view.

LARGE SYSTEMS

59 Blood, sweat and data warehousing
Database administrators find it's a lot of work to build data warehouses.

59 Digital images
Time, Inc. uses Unix and a robotic tape library to build a digitized photo library from its collection of 22 million pictures.

APPLICATION DEVELOPMENT

67 Visual development tools
Is Borland getting the edge over Microsoft?

70 Big projects in orbit
Motorola uses carrots and sticks to manage the Iridium software development project.

Closer Look

MOTOROLA

Features

MANAGEMENT

73 Fund manager feedback
Institutional investors who use State Street Bank's custodian banking technology say there is room for improvement at the cutting edge.

CAREERS

85 Windows 95 training
It may be smoother to use from some standpoints, but it's different and takes some training.

MARKETPLACE

100 In search of CD-ROM
With more than 10,000 titles in circulation, what's a buyer to do? The author of *Entertainment in the Cyberzone* lists the titles that every hip CD-ROM library should have.

Etc.

Calendar ____ 79
Company Index ____ 106
Editorial/Letters ____ 32
Inside Lines ____ 110
Aug. 17 Stock Ticker ____ 107
How to contact CW ____ 110

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Novell to give NetWare an ATM twist

Alliance will let users avoid data bottlenecks

By Bob Wallace

Novell, Inc. is expected soon to announce a strategic alliance with Efficient Networks, Inc. that will enable the network operating system superpower to build Asynchronous Transfer Mode (ATM) capabilities into NetWare, *Computerworld* has learned.

ATM support in NetWare would enable applications for Novell LANs to tap into ATM's high-speed cell-switching technology. That would result in faster transmission and fewer bottlenecks. And programs for ATM LANs can be shared with users on traditional Ethernet and Token Ring LANs.

Asynchronous Transfer Mode

Sources close to Novell who requested anonymity said the vendor will license technology from the ATM start-up but didn't say when NetWare customers would be able to support ATM.

Novell's announcement is slated to follow by just a few weeks rival Microsoft Corp.'s earlier detailing of plans to license ATM client and server software from internetworking vendor Olicom, Inc.

One user at a Windows NT server shop predicted strong user interest in the software, which is called LAN emulation software.

Clearing hurdles

Users need the following issues addressed before they can accept ATM:

- Confusion about ATM
- Availability of ATM products
- High cost of ATM equipment
- Wide-area ATM services
- ATM at usable speeds
- Applications for ATM
- Network operating system vendor support

Support of ATM in network operating systems "would be particularly useful in scenarios where companies want to offer many users access to centralized superservers using ATM," said a network manager at a large pharmaceutical company in the Northeast.

But users who want a complete ATM package will need network operating system support and ATM adapter cards. A spokeswoman for Efficient said the company will soon announce adapters that support ATM at lower speeds. Analysts have long stressed the importance of running ATM at 25M bit/sec., as many users can more easily justify and make full use of the technology at lower speeds.

Analysts described the package as just one more in a series of recent announcements designed to bring ATM to the masses.

"Support of ATM by these two [network operating system] giants will serve to quickly accelerate deployment of ATM," said Daniel Briere, president of TeleChoice, Inc., a consultancy in Verona, N.J. "The ability for existing applications to be used on ATM networks is crucial for users because users won't have to make changes to those applications."

Other analysts agreed. "These vendors are committing to ATM as a key emerging technology for their [network operating systems] much more quickly than anyone expected," said Tom Nolle, president of CIMI Corp., a consultancy in Voorhees, N.J., that tracks the ATM industry. "That's great news for users."

Ascom pitches ATM switch to handle voice, data, video

By Bob Wallace and Laura DiDio

ATM heavyweight Ascom-Timeplex, Inc. this week will detail plans that promise to provide users with Asynchronous Transfer Mode (ATM) switches that can anchor a single high-speed voice, data and video network.

Ascom-Timplex, the time division multiplexer market leader, is seeking to lead the charge into ATM switching. It is promising users switches and ancillary products that will let them build a single network for all types of traffic.

Ascom-Timeplex is planning an ATM interface for its ST-1000, which is a high-speed backbone device with frame switching and time division multiplexing in one chassis. Also due is a model that adds voice and video support and a wide-area ATM switch to link ATM campus LANs.

Used together, the switches are supposed to bring users the benefits of next-generation high-speed switching while cutting costs by consolidating multiple networks to form one enterprisewide network.

The company's advantage lies in combining cutting-edge features such as built-in redundancy and the forthcoming dual 51M/155M bit/sec. interface. ATM capabilities in the Ascom-Timeplex Synchrony switches are luring new users such as Kirk Domingos, senior executive vice president at Hibernia National Bank in New Orleans. The bank currently uses a private frame-relay network specifically designed to migrate to ATM.

"The Synchrony ST-1000 will ensure that I can migrate my current crop of ST-50 switches upward rather than throwing the baby out with the bathwater and rebuilding a network from scratch," Domingos said.

Going head-to-head

The Ascom-Timeplex switching wares will pit the networking powerhouse against Cascade Communications Corp., General DataComm Industries, Inc., Network Equipment Technologies, Inc. and StrataCom, Inc. These competitors just began shipping ATM-capable switches or will do so by mid-1996. However, they won't offer everything in a single box as Ascom-Timeplex does.

"The market for the all-in-one switch like the ST-1000, with routing, multiplexing and ATM, is just emerging," said Eric Hindin, an analyst at The Yankee Group, a Boston consultancy. He praised the new ATM interface for the ST-1000 and Ascom-Timeplex's newfound aggressiveness in the internetworking switching market.

The first of the new products is called the ST-1000 Inter-Nodal Link (INL) and is an ATM interface for the ST-1000 switch. The vendor will offer 45M bit/sec. and 51M/155M bit/sec. interfaces for fiber for the INL.

The latter will ship in the first quarter of next year. A company executive said the modules for the INL will cost $18,750.

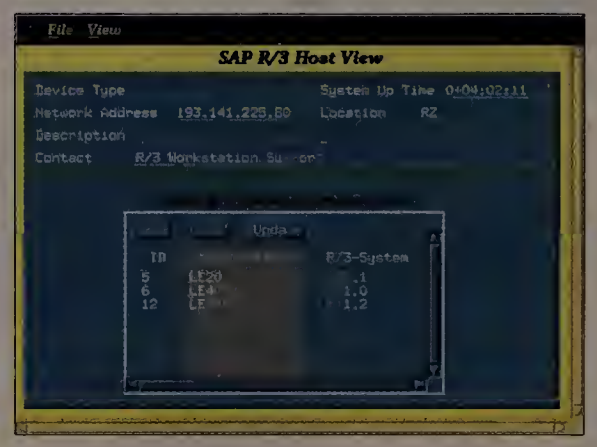
Cabletron fills management gap

Network administrators gain control over systems, too

By Patrick Dryden and Thomas Hoffman

More than a dozen vendors will make their tools for managing systems and applications work with Cabletron Systems, Inc.'s network management platform, thanks to alliances to be announced this week.

New and expanded partnerships with such leaders as Computer Associates International, Inc. will help fill a yawning void for administrators of enterprise networks. Soon, users of Cabletron's Spectrum for Open Systems management software will be able to keep track of the entire network — its connections and resources.



Cabletron's Spectrum *lets administrators check configuration*

Spectrum distributes network management functions across multiple Unix servers — and coming this fall, Microsoft Corp. Windows NT servers. With Spectrum, administrators can deal with the links and alarms throughout an enterprise network.

With all the new platforms and packages being connected, Spectrum users will be able to add software modules from key vendors for functions such as server and client monitoring, trouble ticketing and application tracking.

"Systems management was the one area Cabletron hadn't addressed," said Tim Wilson, an analyst at Decisis, Inc., a consultancy in Herndon, Va. "This move brings in a big chunk of the enterprise management picture."

Such support is overdue, said a network systems specialist at a major manufacturer who asked not to be identified. "Spectrum's lack of a lot of systems management tools has been a problem because we need coordinated coverage," he said. "I definitely want to see what kind of support they can line up."

Organizations that rely on client/server applications from SAP America, Inc. will be able to manage R/3 Version 3.0 with tools from Munich-based Intelligent Communications Software GmbH (ICS).

With this setup, administrators can monitor availability, performance, configuration and error conditions of the R/3 application, according to Albert Fuss, managing director at ICS. "Now they can manage the end-to-end relationship, from the client across the network and through the server," he said.

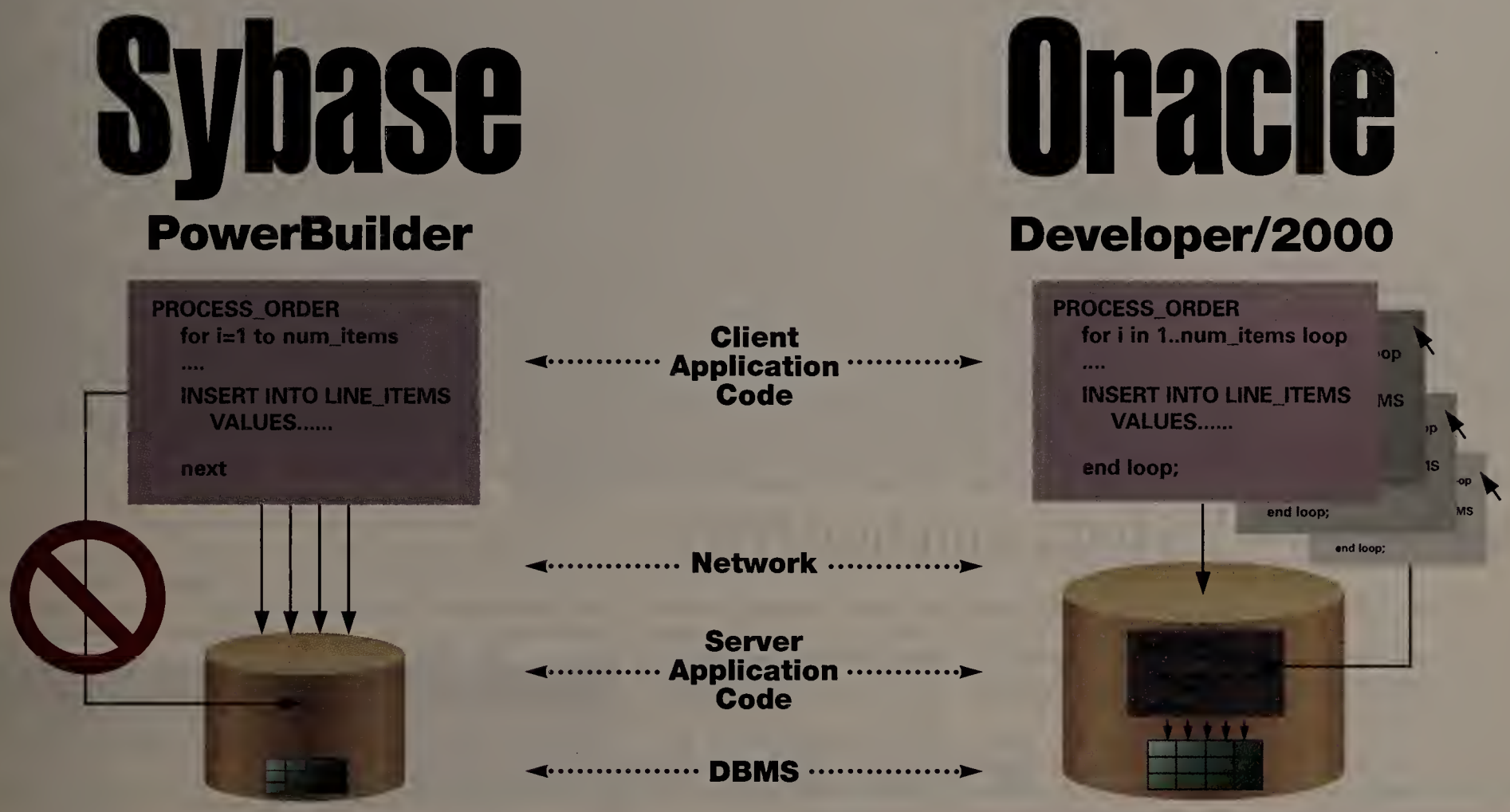
That tool and 60 other vertical applications can work side by side, along with horizontal management functions such as alarm handling and reporting provided by Spectrum, said Bill Tracy, engineering director for Spectrum applications at Cabletron in Rochester, N.H. Integrating the CA-Unicenter systems management suite with Spectrum extends CA's partnerships with leading network management vendors. To date, CA has inked similar deals with Hewlett-Packard Co., Microsoft, UB Networks, Inc. and Sun Microsystems, Inc.

Still, "most users are wrestling with primitive systems management tools and are just at the beginning stage of addressing integrated, multivendor enterprise management," said Eric Hindin, a program manager at The Yankee Group in Boston.

Cabletron's systems management initiative should help it make inroads against network management market share leaders HP and IBM, Hindin said.

Application Partitioning

The network links the client to the server. The client and the server communicate by sending messages across this network. The number of messages exchanged between the client and the server is critical in determining overall system performance. Oracle Developer/2000 drag and drop application partitioning makes it easy to minimize the number of messages exchanged between a client and a server, optimizing both response time and system performance.



PowerScript does not run on the server, therefore drag and drop application partitioning is impossible.

An application program developed with Sybase PowerBuilder 4.0 must run entirely on the client computer. The above program enters a purchase order into the database. If this application is built entirely using PowerBuilder 4.0, every item purchased requires a separate pair of messages to be exchanged between the client and the server computer. Therefore, a simple ten-line purchase order requires at least 20 messages to be passed on the network. This high volume of message traffic will slow response time for an individual user, and bottleneck the entire system with a large number of users. And there is no easy way to fix this.

PL/SQL runs on the client and server, therefore drag and drop application partitioning is easy.

Contrast this with the same exact application written with Developer/2000 and tuned using drag and drop application partitioning. It takes a few seconds to drag that portion of the application that communicates with the DBMS off the client computer and drop it onto the server. Now, when you enter a purchase order using the newly partitioned application, only one pair of messages is sent from the client to the server—regardless of how many items are in the order. The optimally partitioned application delivers instantaneous response time to an individual user. And the partitioned application can support ten times more users than when the application ran entirely on the client computer. If you have more than a handful of users on your network, call Oracle for scalable software. 1-800-633-1071, ext. 8192.

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Compaq, HP, IBM wage tit-for-tat PC price war

By Jaikumar Vijayan

In what could signal another round of price-cutting by major PC vendors, Compaq Computer Corp. last week announced it was dropping prices across most of its commercial and consumer desktop PC lines by up to 25%.

Rival IBM responded with an immediate price cut of its own, and Hewlett-Packard Co. said it will move soon to undercut Compaq's new pricing.

The price cuts are mainly the result of falling prices on Intel Corp. Pentium processors and disk drives, said David Goldstein, an analyst at Channel Marketing Corp. in Houston. He predicted other vendors will soon pass falling component prices along to customers.

By moving first, however, Compaq may have gained ground in the price wars, some analysts said.

"Over the last eight months or so, HP has worked very hard to wear the mantle of price leadership. Now Compaq has shown just how intent they are to retake that mantle," said Richard Zwetchkenbaum, an analyst at International Data Corp. in Framingham, Mass.

That mantle is already up for grabs though. One day after Compaq's announcement, IBM said it is rolling back prices across its business desktop lines by up to 26%. At the same time, a source at HP said the company is readying a series of pricing moves aimed at aggressively undercutting Compaq's new prices.

Meanwhile, both IBM and HP's price cuts included some of their most popular business desktop models. For instance, a Compaq ProLinea 5100 system with a 720M-byte hard drive and 16M bytes of RAM dropped 25%, from $2,909 to $2,249. IBM lowered prices 26% to $3,070 on the IBM PC 750, a 120-MHz Pentium-based system with 16M bytes of RAM and 1G-byte hard drive.

Intel readies P6 beta and bug fixes

By Jaikumar Vijayan

Intel Corp.'s announcement last week of a beta-test program for its next-generation P6 microprocessor ironically coincided with a separate effort to fix a chip flaw that causes data corruption in some PCs.

Intel's P6 User Test Program

The program

Intel will loan preproduction P6 processor-based systems to a diverse group of several hundred PC users.

To participate

Interested users must fill out an on-line questionnaire for details on the kind of operating system, application software and hardware being used, as well as potential applications for the P6.

Requirements

Users must sign a nondisclosure agreement and return the systems by March 1996.

For more information

Users can call Intel at (800) 628-8686 or access Intel's World Wide Web site at http://www.intel.com.

The problem, related to a controller chip found on early Peripheral Component Interconnect (PCI) motherboards manufactured by Intel and others, causes data to be lost or altered under certain operating system environments. These include IBM's OS/2 Warp, early versions of Microsoft Corp.'s Windows NT 3.1 and the Linux shareware operating system.

Last week, as Intel posted information about the flaw on the Internet and directed users to software fixes, the company was also laying the groundwork for the P6 chip beta program.

Intel plans, for the first time, to seed some 700 to 1,000 users worldwide with prototypes of its next-generation P6 processor. The P6 is expected to appear in systems at Comdex/Fall '95 (see chart).

Intel is targeting heavily engineering-oriented, compute-intensive, multimedia and graphical application environments. These environments are home to the types of users who discovered the Pentium flaw that created a public relations nightmare for Intel last year, and those users are the initial targets of the P6.

Among the objectives of the program are gauging the actual performance of the chip in real-world application environments and catching and eliminating bugs before the scheduled launch of the chip later this year.

The timing may be only coincident with the PCI issues, but those sorts of problems "really hit at the bigger issue of why client/server platforms don't have the data integrity features of mainframe and proprietary host-based platforms," said Russell Schneider, president of Marketex Computer Corp.

P6 profile

It is partly because of such problems that the company is putting the P6 through its paces in a wide variety of application environments before its release, analysts said.

"One of the motivations [behind the test program] is to compile a profile of 32-bit applications that the P6 is best suited for," said Dean McCarron, an analyst at Mercury Research, Inc. in Scottsdale, Ariz.

According to Intel, those interested in testing P6 systems can apply by filling out a questionnaire on Intel's home page on the World Wide Web.

"Considering that software vendors have been doing these kinds of beta tests for years, it's good to see chip vendors take steps to alleviate problems before they begin," said David Forfia, manager of information technology services for the city of Austin, Texas, electric utility department.

Problems live in Windows 95, too. See page 37.

Apple will beef up PowerBook lineup

By Lisa Picarille

Next week, Apple Computer, Inc. plans to give a much-needed overhaul and add power to its PowerBook line of portable computers.

The Cupertino, Calif., computer maker will take the wraps off its first PowerPC-based notebooks — the PowerBook 5000 series — along with a PowerPC-based subnotebook, two portables that use Motorola, Inc.'s 68040 processor and a card that upgrades older PowerBooks to the PowerPC chip, according to sources briefed by Apple.

Notebook computers

One user was eagerly awaiting the release of the PowerBooks and PowerPC-based portables.

"The PowerPC-based PowerBooks are very exciting," said Russ Chapman, technical service manager at the Boston office of Jack Morton Productions. More than half of the 30 Macintoshes in his office are PowerBooks. "The more horsepower, the better," Chapman said.

pansion bay and can be replaced by other media types. Systems on the 5000 series range weigh 5.8 pounds to 6.2 pounds, according to sources close to Apple.

Apple also plans to release its new PowerBook 2000 series. The first system in the subnotebook line uses an 80-MHz 603E PowerPC chip and weighs 4.8 pounds. Prices for the 2000 series are expected to start at $3,500.

Low-end attack

Apple will also add two low-end systems to its 68040-based line of PowerBooks. The systems, which will replace Apple's popular 500 series, use Motorola's 33-MHz 68LC040 processor and are expected to cost less than $2,000.

For users of older 68040-based PowerBooks, Apple offers an upgrade card that sports a 603E 100-MHz PowerPC chip. The card is expected to be priced at less than $1,000. Apple declined to comment on unannounced products.

Chapman also applauded some of the other new features in the 5000 series, including the built-in infrared capabilities, which allow users to have print- and file-sharing capabilities without physically hooking up to a network.

"A big thumbs-up on the infrared once they get the speed up," Chapman said. "I have so many users that complain about hooking and unhooking all kinds of cords. Now they don't ever have to touch a cord."

PowerBook menu

PowerBook	Processor	Display	Weight
100 series	33-MHz 68LC040	9.5-in. passive gray	5.9 pounds
	33-MHz 68LC040	10.4-in. dual-scan color	6.4 pounds
5000 series	100-MHz 603E	9.5-in. passive gray	5.8 pounds
	100-MHz 603E	10.4-in. dual-scan color	6.2 pounds
	100-MHz 603E	10.4-in. active color	6.2 pounds
	117-MHz 603E	10.4-in. active color	6.2 pounds
2000 series	80-MHz 603E	9.5-in. active color	4.8 pounds

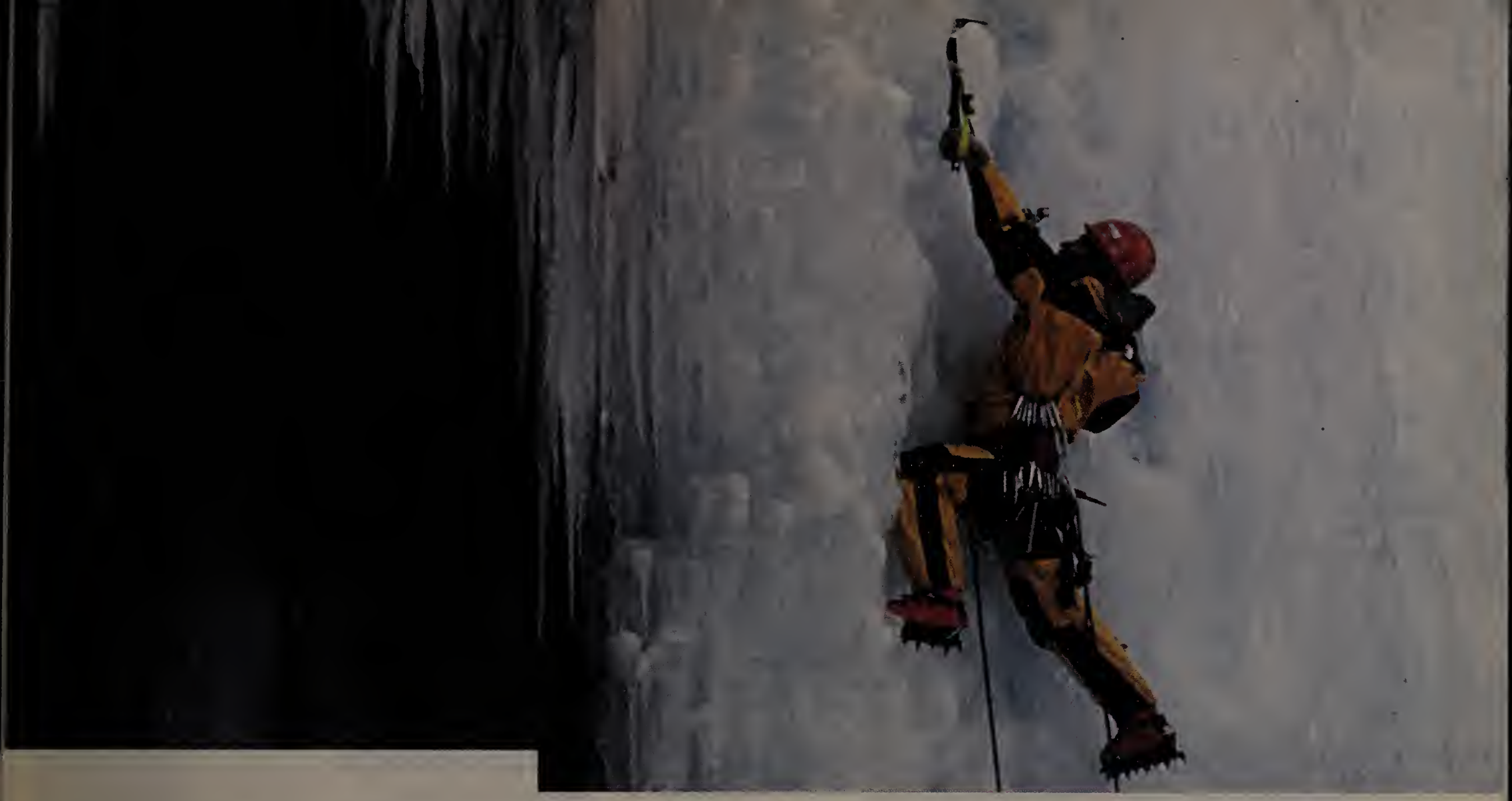
The 5000 series will comprise four models based on the 603E PowerPC chip running at 100 MHz or 117 MHz.

The systems are expected to cost $2,000 to $7,000 and include three different types of screens. The models will also have two Type II PCMCIA slots, built-in infrared capabilities and removable floppy drives that will sit in the ex-

Corrections

Due to a reporting error in "Imaging market gets focused on NT" [CW, July 24], Craig Goldman, chief information officer at The Chase Manhattan Bank NA, was incorrectly identified as Greg Goldman.

Due to reporting errors, "Red Brick offers small warehouse data marts" [CW, July 31] incorrectly stated which database Playtex Apparel, Inc. runs for transaction processing. The firm uses IBM's IMS product. Playtex was also wrongly described as having plans to upgrade to Red Brick Systems' VPT 3.5 data warehouse database. However, Playtex, which runs Release 2.8 of Red Brick's warehouse, is considering a move to VPT 3.0 of the database, but no decision has been made.



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White House relaxes export rules on encryption

Move comes after French student cracks Secure Sockets Layer encryption code

By Gary H. Anthes
and Kim S. Nash
WASHINGTON

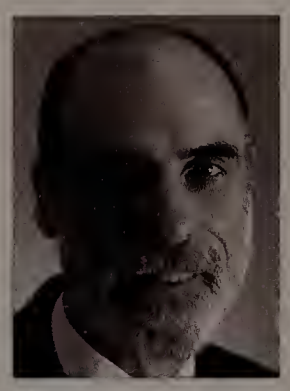
Bowing to intense pressure from users and vendors, the White House last week said it will permit export of data encryption products that are some 16 million times stronger than those currently exported out of the country.

The announcement could not have been more timely. Last week, a French student cracked the encryption scheme used in an export implementation of the Secure Sockets Layer (SSL) protocol, a security standard used in such popular products as the Internet Navigator from red-hot Netscape Communications Corp.

The student used a "brute-force search" in which a networked array of 112 computers worked for eight days trying different encryption keys until the right one deciphered a test message.

In a posting on the Internet, the student said, "The exportable SSL protocol is supposed to be weak enough to be easily broken by governments yet strong enough to resist the attempts of amateurs. It fails on the second count."

Security experts said they weren't surprised by the student's feat. They claimed it buttresses their argument that the government policy that limits exports of strong encryption products — those using keys longer than 40 bits — puts users at risk. "I had been saying all along this was a weekend's work on a Macintosh," said Vinton Cerf, senior vice president for data architectures at MCI Communications Corp.



MCI's Vinton Cerf *wasn't surprised at how easy it was to break the SSL encryption scheme*

At a cryptography workshop here, Clinton administration officials said they will develop guidelines for the relatively unrestricted export of products with encryption keys up to 64 bits, where every additional bit doubles the difficulty of a brute-force attack. They said they hoped such exports would be allowed by the end of the year.

The catch is that those products must employ some kind of "key escrow" feature, by which a trusted third party holds copies of the keys obtainable by law enforcement agencies with court orders.

Unlike the case of the vastly unpopular Clipper chip proposal, the White House said it is willing to allow software implementations of key escrow encryption and let parties other than the government hold the keys.

"This is far better than I ever expected," said Stephen Walker, president of Trusted Information Systems, Inc. in Glenwood, Md. "There will now be reasonable information security throughout the world, not just in the U.S."

Repeat after me

When asked about persistent rumors that the administration might propose legislation mandating the use of key-escrow encryption, White House information technology policy guru Michael Nelson said, "We have a mantra about that at the White House — 'Voluntary, voluntary, voluntary.' We recite it every day when we get up."

Others apparently were less thrilled. "This has a major impact on national security and law enforcement," said Michael Nelson, special assistant to the president for information technology. "It wasn't easy to make this change."

The weakness exploited by the student is due entirely to the 40-bit key length and is not a flaw in RC4 — the encryption algorithm used — its implementation in SSL or Netscape Navigator, experts said. The domestic version of RC4 uses 128-bit keys, far too strong to be broken by even a supercomputer, they said.

"This wouldn't affect any of our average users," said Mike Homer, director of marketing at Netscape in Mountain View, Calif. Netscape consistently advises customers not to put sensitive information in its 40-bit export product, he said.

The eight-day decryption process takes too much time and money for a task whose potential payoff is small, Homer said. Moreover, the student decrypted a single message. "If he wanted more, he would have had to start all over again," he added.

News Shorts

Microsoft vs. DOJ: Round 4

The much-delayed antitrust settlement between **Microsoft Corp.** and the **U.S. Department of Justice** is slated for another court hearing today before U.S. District Court Judge Thomas Jackson in Washington. One issue will be whether the July 1994 settlement, which covers Windows licensing practices, also covers Windows NT. Jackson got the case after an appeals court yanked it away from Judge Stanley Sporkin and ordered that the decree be signed [CW, June 19].

Pennsylvania 6-5000@att.com

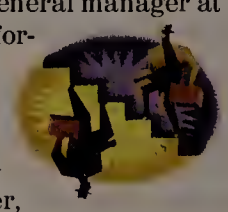
Promising to make the Internet as widely used as the telephone, **AT&T Corp.** last week announced its long-awaited effort to provide 'net services to business and consumers. AT&T said little and did not reveal prices or dates of availability. It did say limited technical trials will begin within 60 days. AT&T said it envisions moving 800-line business customers to the Internet and offering dial-up Internet access to its 80 million customers worldwide.

HP posts strong earnings

Led by its printer and PC units, **Hewlett-Packard Co.** posted strong earnings last week and reported a surge in orders, which ensures a strong fourth quarter. HP last week reported a 66% increase in third-quarter profits, from $347 million a year ago to $576 million. Revenue increased 28%, from $6.1 billion to $7.7 billion. For the nine months ended July 31, earnings increased 56%, to $1.8 billion, compared with $1.1 billion last year. Revenue has reached $22.5 billion, up 25% over last year.

Compaq nabs portable exec

Compaq Computer Corp. has hired the man who left its portables business in the dust. Michael Winkler, who was vice president and general manager at Toshiba America Information Systems, Inc., was named senior vice president of Compaq's portables division. Winkler, who is credited with being a major reason for Toshiba's surge past Compaq, will join Compaq in November.



Intel wins again

Sequoia Systems, Inc. last week announced the first in a new line of department and workgroup servers based on Intel Corp. microprocessors. The Sequoia Enterprise Servers, the first by the Marlboro, Mass.-based company, do not use Motorola processors and will cost about $8,000.

ORB rivals stand united

The Object Management Group (OMG) will move forward this week to define a way for object request brokers (ORB) to interoperate with Microsoft Corp.'s OLE object interface. While OMG members have had acrimonious relationships in the past, the need to head off Microsoft's dominance on the desktop has ORB vendors involved in planning to issue a statement attesting to their common purpose, sources said. Unity now is important to make it clear that ORB vendors are "unwilling to cede control of the network to Microsoft," said David Curtis, vice president and chief technology officer at Expersoft Corp.

Middleware access to IMS

IBM plans to link its MQSeries messaging middleware to its IMS transaction processing software to enable mainframe-based IMS applications to be accessed by users on other systems. The link will be included in the next version of MQSeries for IBM's MVS operating system, which is due out in mid-1996, the company said.

CIOs shuffle

Several chief information officers landed in new jobs last week. Steven Heckler, former vice president of information services at California health maintenance organization **Health Net Corp.**, joined **Sony Pictures Entertainment** in Culver City, Calif., as senior vice president of information services. Meanwhile, R. Max Gould was named to the newly created post of chief technology officer at **Aetna Life & Casualty Co.** in Hartford, Conn. Gould, 55, is responsible for Aetna's information technology strategy, direction and architectural decisions. Prior to joining Aetna, Gould was a senior vice president in charge of global management information systems at Citibank NA. And **Corning, Inc.**'s former CIO, Harvey R. Shrednick, has taken a post as a professor at Arizona State University in Tempe.

SHORT TAKES **AT&T Corp.** announced last week that it will distribute **Netscape Communications Corp.**'s World Wide Web browser with AT&T PCs and other products. ... **IBM** last week announced a new disk-based power-management technology it says will reduce a drive's power consumption by up to 20%. The technology will be in future models of its Travelstart family of 2½-in. disk drives and will boost battery life by up to 8%. ... **Mastercard International, Inc.** has recruited 11 major banks for its Smartcash project, which will issue smart cards, or electronic stored-value cards, through a program that rivals a similar effort announced earlier this year by Visa International, Inc. [CW, March 27].... Longtime industry visionary **Gordon Bell**, who spearheaded the VAX for Digital Equipment Corp., joined Microsoft Corp. last week. Bell will work in Microsoft's advanced research group, focusing on telecommuting, among other things.

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OS/2 Warp Server beta sends users into orbit

By Laura DiDio

IBM's OS/2 Warp Server — slated to go into widespread beta testing next week — is getting rave reviews from early alpha and beta customers and industry analysts.

OS/2 Warp Server melds the best features of the enhanced OS/2 operating system with the company's LAN Server 4.0 network operating system, including file, print and application services and true object-oriented capabilities, according to IBM.

OS/2 Warp Server, set to ship in the first quarter of 1996, also incorporates a slew of enhanced capabilities, including pieces of IBM's NetView systems and network management, remote access, backup and advanced print functionality, said John Albee, marketing brand manager at IBM's Personal Software Products group.

Initially, the package won't have any directory services capabilities to compete with Novell, Inc.'s NetWare Directory Services. Instead, IBM plans to embed Distributed Computing Environment directory and security features into OS/2 Warp in the next 12 months, Albee said.

Despite this shortcoming, "we can't wait to get it," said George Szatkowski, senior technical support specialist at Metra railroad in Chicago. "OS/2 and LAN Server have been remarkably feature-rich and stable products."

Szatkowski said the migration to OS/2 Warp Server will give Metra more flexibility and the ability to back up every workstation on the network regardless of whether they are running disparate operating systems. This means less work for network administrators who can use one standard method of backing up all PCs, Szatkowski said.

Management features a plus

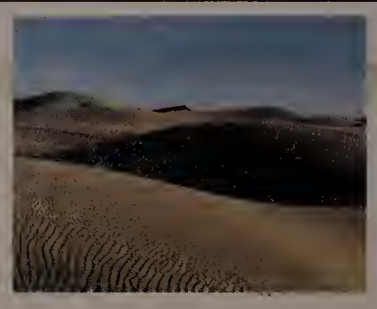
Another user, David Dupre, associate systems programmer at Provident Life & Accident Co. in Chattanooga, Tenn., said he was especially interested in OS/2 Warp Server's systems management features. The insurance company has more than 1,500 OS/2 users.

"For an enterprise shop with thousands of workstations, it is important to be able to query and manage those workstations over a network," Dupre said.

Bob Sakakeeny, an analyst at Aberdeen Group, Inc., a consultancy in Boston, agreed. He said IBM's strategy is to position OS/2 Warp Server as a top-notch application and database server by bundling add-on packages. These include databases, mail/fax capabilities, transaction processing and Internet and SNA support. The combination is a big lure for customers, Sakakeeny said.

"IBM has made OS/2 Warp Server a total operating system and network operating system package; with [Microsoft Corp.'s] Windows NT and NetWare, you'd pay extra for some of these services," Sakakeeny said. "If you're already a LAN Server or OS/2 Warp customer, you'd be crazy to migrate to another network operating system platform."

Senior editor Lisa Picarille contributed to this report.



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Things in common

IBM has ported Taligent, Inc.'s CommonPoint object-oriented application development tool to OS/2.

Announced at last week's Object World trade show in San Francisco, IBM CommonPoint for OS/2 is now in beta and due out by year's end. It is based on Taligent's CommonPoint 1.0 reference release.

It will give OS/2 users more than 100 object-oriented frameworks that can streamline development and deployment of applications by providing pre-generated code for commonly used functions.

IBM also said it is delivering IBM CommonPoint for AIX Version 4.0, which supports development of portable applications on the RISC platform. —*Lisa Picarille*

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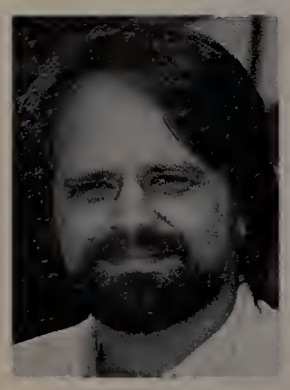
IBM seeks virus antidotes

By Gary H. Anthes
HAWTHORNE, N.Y.

Rows of PCs stand shoulder-to-shoulder bchind a double-locked door in IBM's Thomas J. Watson Research Center. Most are idle. Signs declare them "Clean," but one flickers ominously under a warning that it is "Infected."

"This one is doing triage," explained Steve R. White, senior manager of IBM's High Integrity Computer Laboratory here. The PC is examining the latest batch of computer viruses, which come in from all over the world at a rate of 20 to 25 a week, he said.



IBM's Steve R. White *says the company's research project will ease virus detection*

The automated triage — in which a bit stream is determined to be a known virus, an unknown virus or not a virus at all — is part of a multimillion-dollar research project that IBM said will lead to an automated immune system for computers patterned after biological processes.

The benefit, IBM said, will be faster, easier and more thorough response to virus attacks.

The frequency of new computer viruses has held relatively constant for the past several years, but there is cause for concern, White said. Viruses are acquiring the ability to spread at light speed as computers become networked. Emerging mobile intelligent agents, which prowl networks looking for information for their owners, have the potential to spread a virus around the globe in hours, he added.

Virus vulnerability

Known computer viruses – **6,000**
Number observed in real incidents – **400**
Percentage of infections caused by the Top 10 viruses – **67%**
Viruses found per year per 1,000 PCs in a large company – **4**
Estimated number of virus writers worldwide – **200**
Number of new viruses written every day – **3 to 5**

Source: IBM Thomas J. Watson Research Center, Hawthorne, N.Y.

IBM's research is aimed at automating the tedious manual effort now required to analyze new viruses and develop protections against them. IBM is also developing ways to automatically propagate this information to other machines on a network in a kind of mass electronic immunization.

Duke Power Co. in Charlotte, N.C., uses IBM's AntiVirus product on 8,000 PCs and servers. Jim Appleyard, manager of information security and recovery services, said the work at IBM is of great interest as Duke Power becomes more networked.

"My company is doing business overseas, and who knows what care they are taking with the networks over there," Appleyard said.

When the automated immune system is commercially available in two years, part of it will exist on user machines in the AntiVirus product, and part will run as a service at IBM. "The intent is that a computer in your organization would find an unknown virus and send a sample of it over the Internet to our lab," White said. "Our computers would analyze it and send back information about how to detect and disinfect it." That enterprise would then be immune to that virus, just as a human who once conquered the measles virus doesn't need to worry about catching it again, White said.

Computer virus expert Peter Tippett, president of the National Computer Security Association in Carlisle, Pa., said IBM is ahead of other vendors in automating the derivation of code for virus removal and repair. However, Tippett said although the new capabilities would be useful only in the tiniest fraction of virus attacks, "people want products that will get every last virus."

Banks differ about security on the Internet. See page 52.

Bug zappers

Functions in IBM's AntiVirus product include the following:

- **Detect anomalies.** Signals the presence of a virus by looking for generic virus behavior.
- **Scan for known viruses.** Looks for the signatures, or telltale bit patterns, of some 6,000 known viruses.
- **Remove known virus.** Executes repair code for the virus.

In development

Functions in prototype or under development at IBM include the following:

- **Creation of virus samples using decoys.** If detected virus is unknown, product lures it to infect several "decoy" programs.
- **Automatic virus analysis.** Analyzes virus's effects by comparing infected decoys with one another and uninfected decoys. Derives repair code and stores in database.
- **Automatic signature extraction.** Using statistical techniques, this function chooses a sequence of bits from the virus code likely to be found in all virus occurrences but not in legitimate programs. Stores in database.
- **Broadcast infection warning.** Sends "kill signal" from infected machine to neighboring machines with virus signature and repair information. Those machines are then disinfected and immunized. — *Gary H. Anthes*

Cisco to unwrap three next-generation routers

By Bob Wallace

Router market leader Cisco Systems, Inc. will next month formally announce three high-end routers that will enable users to build faster, more powerful and more flexible LAN internetworks, *Computerworld* has learned.

Sources briefed by Cisco on the upcoming product introduction said the trio of next-generation routers offers higher performance, greater versatility and more redundancy than the vendor's highest-end routers, the Model 7000 and 7010.

"The new routers use a distributed microprocessor architecture with multiple high-speed buses and processors," said an industry analyst who requested anonymity. "That means they're more reliable since there's no single point of failure and plenty of redundancy."

Sources said the Cisco 7500 routers will compete against Bay Networks, Inc.'s high-end Backbone Node router. Cisco's 7513 has up to 13 slots, compared with five on the older 7000. The 7505 has five slots, and the 7507 has seven, sources said. The new models use a 1G bit/sec. bus; the 7000 used a 533M bit/sec. bus.

The 7500s have Mips Technologies, Inc. R4000 RISC processors and can initially process 550,000 packet/sec. The speed will be increased at a later date.

In the third quarter, Cisco will ship a single-port 100Base-T card and four-port Ethernet, Token Ring and synchronous cards for the 7500 routers. Cisco confirmed plans to announce the routers within a month.

Digital

CONTINUED FROM PAGE 1

broad list of attributes such as date and type attached to it.

It also will run on many platforms, including Microsoft's Windows NT on Intel Corp.- and Alpha-based systems, OpenVMS and Digital Unix. It will support several clients on the desktop such as Microsoft's Mail and Lotus Development Corp.'s CC:Mail.

The OfficeServer project is still largely unknown outside Digital, and early reaction has been mixed.

Form of protection

Geoffrey Bock, an analyst at Patricia Seybold Group in Boston, said Digital is trying to please its large installed base, especially the risk-averse who want to stay with the tried and true.

Some customers who have invested in Digital "are interested in stability and continuity. They will be satisfied with OfficeServer," Bock said. "On the other side are people who are more interested in true client/server technology; they would be interested in migrating to Exchange."

Tony Ioele, president of Ioele/Griggs Associates, Inc. in Exton, Pa., agreed. He said if a company is using All-In-1 on VAX machines and wants to go to a LAN-based system, it doesn't have too many powerful alternatives. "So they stick with what they have until they find an alternative solution. Now they do," Ioele said.

Digital's OfficeServer will feature the following:

- 1992 X.400-compliance
- MAPI support
- X.500 directory services support
- File cabinet server that lets users manage various information

However, Tim Sloane, an analyst at Aberdeen Group, Inc. in Boston, isn't so sure OfficeServer is a good idea. Although he said he is "bullish" about the systems integration relationship between Digital and Microsoft, "Digital is going into competition mode on something they don't need to."

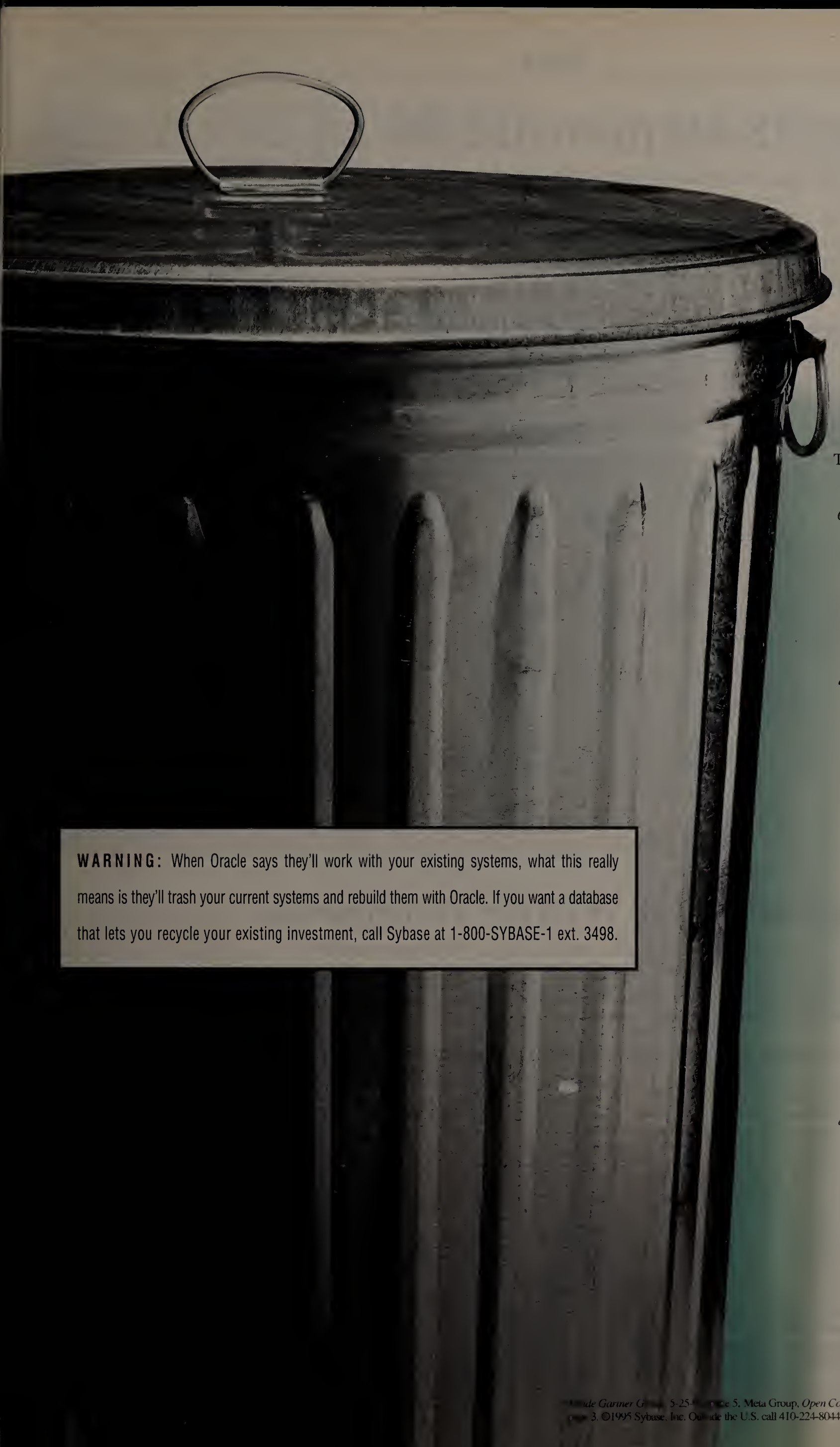
Still, all parties — even Digital — agreed that OfficeServer will compete with Exchange, despite the recent alliance. Internal documents obtained by *Computerworld* clearly show Digital believes it has the technology needed to pull off OfficeServer.

Indeed, Signe Maximous, Digital's enterprise groupware marketing manager in Alpharetta, Ga., acknowledged that there will be competition.

She said Digital has some capabilities that Microsoft doesn't, such as multiple-platform support and the much-touted file cabinet feature.

Trying to explain the differences between Microsoft Exchange and OfficeServer, Maximous said that for Microsoft-only environments, OfficeServer "is not the right solution." Instead, "people might like DEC in heterogeneous environments. We have superior capabilities we need to get out to the public, and they need to make the decisions."

For its part, Microsoft's Exchange group was unaware of this development. "We're not familiar with this," said Greg Lobdell, group product manager in Redmond, Wash. He declined to comment further.



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Users delay 32-bit move till '96

Say applications' stability key to realizing performance benefits

By Cheryl Gerber

Corporate users said the benefits will ultimately outweigh the costs of moving to 32-bit applications, but they are neither budging nor budgeting for them until next year, when the applications land on proven ground.

"We plan to standardize on 32-bit Windows 95 applications. But we'll wait until next year to be sure there are no surprises in Windows 95," said Wade Brougher, plant manager at Gulf Forge, Inc. in Houston.

Gulf Forge will use the time to consider which 32-bit computer-aided design program to use at its steel manufacturing plant. Whatever it decides, the company doesn't expect training will cost much. But Brougher said the learning curve will be shorter for users moving from DOS to Microsoft Corp.'s Windows 95 than for those moving from Windows 3.1 to Windows 95. He cited the Windows 95 task bar, the longer file names and other easier-to-use features that make Windows 95 intuitive for first-time Windows graphical user interface users.

Analysts concur with users' cautious approach to 32-bit application migration. "We're telling our customers to wait until the first half of 1996, until software vendors come out with a maintenance release or a tune-up pack for 32-bit applications. Then target your power users first," said Michael Gartenberg, research director at Gartner Group, Inc. in Stamford, Conn.

In the offing

Besides better performance, users and analysts cited the following top benefits of using 32-bit applications:

- Longer file names that are easier to remember.
- Open and save dialog boxes that ease navigation of folders and directories.
- Protected memory that gives each application its own memory space, increasing stability. This should result in fewer calls to help desks and lower training costs.
- Multitasking that lets users run multiple applications simultaneously and switch between them easily.
- A 32-bit application that runs unmodified under Microsoft's Windows NT.

With 32-bit software, users can unlock the full potential of office suites, using applications together instead of separately. They will be more likely to unify different data types in compound documents, Gartenberg said.

However, user expectations revolve around more nitty-gritty issues. Less training and ease of use are primary reasons users said they would move to 32-bit software. For example, the Utah Department of Economic Development already uses the Windows 95 beta version of Netscape Communications Corp.'s network browser, Navigator 1.2. That 32-bit software makes it easier to browse the Internet than the previous 16-bit version, said Michael Allred, director of business information systems at the department.

Andrew Gahm, network systems programmer at West Jersey Health Systems, a nonprofit group of four hospital systems in Gibbsboro, N.J., said he was glad that software will finally take full advantage of the Intel Corp. 32-bit processors in speed and data throughput.

West Jersey Health recently formed a committee to decide which of three 32-bit office suites it will pick.

The Utah state agency has already decided to upgrade to 32-bit software, most likely Novell, Inc.'s PerfectOffice suite, and is taking the upgrade cost in stride.

Allred estimated it will cost $500 per workstation to upgrade, including the cost of software and training. He isn't including hardware.

But few users so far have specified the exact cost of the upgrade. "We haven't planned the cost yet, but training isn't a consideration. Instead, it's the time and cost of support and upgrading hardware," Gahm said.

& **Beta testers** report on glitches they have found. See page 37.

A sampling of Windows 95-compatible 32-bit applications

Company name	Product name	Available	Price
Adobe Systems	PageMaker	Q4 1995	$895 ($149 upgrade)
	Photoshop	Q4 1995	$895 ($30 upgrade)
Borland	Paradox and Borland C++ 5.0	December 1995	Not available
	Delphi	Q4 1995	Not available
Delrina	CommSuite 95	November 1995	$179
Netscape	Navigator 1.2	September 1995	$39 per user
Corel Systems	Corel Draw 6	By Aug. 31	$695
Gupta	SQLBase	By Aug. 24	Starts at $395
	SQLWindows	Within 90 days	Not available
Autodesk	AutoCAD 13 for Windows 95	Within 90 days	CD-ROM: $3,750 Diskette: $3,995
Lotus	SmartSuite	October 1995	Not available

PC makers gear up for Win 95

By Jaikumar Vijayan

On the eve of the release of Microsoft Corp.'s Windows 95, some PC makers are trying to grab the spotlight with their own Windows 95-related announcements.

Some of their announcements last week included the following:

PC hardware

- Anticipating the demand for increased disk space and memory for Windows 95, Compaq Computer Corp. said it will raise the standard minimum hard disk size in its ProLinea and DeskPro business products from 270M bytes to 630M bytes.

Compaq also said it will introduce a toll-free support hot line. For $35 per incident, customers can get around-the-clock Windows 95-specific technical support. The Houston-based company is adding Windows 95 installation tips, software drivers and a list of frequently asked questions to its on-line forums.

- Sioux City, S.D.-based Gateway 2000, Inc. last week launched a portable notebook called the Solo. Its keyboard includes two Windows 95-specific keys that let users open the Start menu and bring up context-specific menus.

The company also said it will offer free "lifetime" support for problems related to the installation of Windows 95 and fee-based support for technical issues related to the operating system. According to a spokesman for Gateway 2000, an estimated 1,000 of Gateway's 1,700 customer support people have already logged in about 50 hours of training each on the operating system.

- AST Research, Inc. last week introduced SPOT, an icon-based desktop organizer and navigator that gives users a shortcut to Windows 95 desktop utilities and folders.

The company is also reportedly negotiating with McAfee Associates, Inc. to bundle antivirus software for Windows 95. As part of its Windows 95 campaign, the company has been offering "sneak previews" and reseller training sessions nationwide during the past few weeks.

- Dell Computer Corp. is offering a suite of service options to help introduce customers to Windows 95. Dell will offer Windows 95 users 30 days of free telephone support and fee-based support ranging from a $29 per-incident charge to a $149 one-year service contract.

& **Reviews** of Windows 95. See stories on pages 37 and 41.

1-2-3 tripped up

CONTINUED FROM PAGE 1

'batteries not included.' This means SmartSuite will be missing a key piece."

Pressure cooker

SmartSuite for Windows 95 minus the 1-2-3 portion is the result of intense pressure from suite market leader Microsoft Office, which is due out this week when Windows 95 debuts. Novell, Inc. will ship its PerfectOffice for Windows 95 by the end of the year.

"Microsoft Office will have a big lead time since both Lotus and Novell are behind the eight ball to meet the timetable of the Windows 95 release," said Jeff Silverstein, editor of the "Software Industry Bulletin," a newsletter in Stamford, Conn. "But Lotus has to ship something as soon as possible. They can't afford to give Microsoft any more openings."

One SmartSuite user wasn't overly concerned about the lapse.

"This is a major embarrassment," said Jeffrey Tarter, editor of the "Soft Letter" newsletter. "I would say this is on par with walking down Main Street at high noon wearing no pants. This is not just batteries not included. This means SmartSuite will be missing a key piece."

"It doesn't bother me at all," said Walter Walvick, an attorney at the law firm of Dickstein, Shapiro & Morin in Washington. "We plan to upgrade to the Windows 95 version of SmartSuite, but we realize that products have cycles, and that's just the way it is. The world isn't perfect, and that's OK."

The first version of SmartSuite for Windows 95 will include Windows 95 versions of the WordPro word processor, Approach database, Freelance graphics package and the Organizer calendar and scheduling program [CW, Aug. 14].

Microsoft to pull out the stops for Win 95 debut

By Stuart J. Johnston

Here's the dilemma: After a two-year unremitting media circus over Windows 95, how do you make the actual launch something other than anticlimactic?

If you are Microsoft Corp. Chairman Bill Gates, you invite the media to your 270-acre Redmond, Wash., campus and put on a circus of your own, replete with big top, ferris wheel and midway.

Besides the main tent where the official launch will be held, the company will pitch several sideshow tents. At these pavilions, it will demonstrate many of the more than 150 applications and games from third-party vendors that will be introduced. Another 280 PC manufacturers have signed up to bundle Windows 95.

Missing the party

Notable by its absence will likely be IBM, which wasn't on a list of major PC "partners" that Microsoft released last week. IBM confirmed last week that it hadn't signed a license yet.

Many millions

Analysts say conservative estimates put projected total sales of Windows 95 this year at 20 million units. The more optimistic ones project 30 million sales this year.

The carnival atmosphere will extend to the Internet, where Microsoft's home page will post a "virtual launch event," featuring live transcripts of speeches and photos of the campus throughout the day.

Rampant rumors of celebrity guests attending the daylong launch event have run the gamut from members of the Rolling Stones to Jay Leno. Officials wouldn't comment on the speculation.

Leaving no stone unturned, Microsoft has also produced a half-hour infomercial that will air nationwide in prime time on Aug. 27 and Aug. 28. The show is hosted by Anthony Edwards, star of the NBC drama *E.R.*

Overall, the company said it will spend as much as $200 million promoting Windows 95 and Office 95, the new version of its desktop applications suite also set to ship Aug. 24.

More than 5 million copies of Windows 95 will go on sale in stores Thursday, not counting copies preinstalled on new PCs that will also ship that day.

Priced to sell

An upgrade version, which will install over versions of Windows 3.x, Windows NT or OS/2, will have a suggested retail price of $109. A version intended for new installations on non-Windows machines will cost $209. Street prices will be significantly lower — the upgrade will cost as little as $89.

But when the circus leaves town on Friday, most users will be just beginning to find out whether Windows 95 qualifies as a trip to the fun house or is more like Mr. Toad's Wild Ride.

A recent exclusive *Computerworld* survey of 100 information systems managers who participated in the Windows 95 beta or Preview programs discovered the following:

- Windows 95 will likely get a slow start in corporations, with only 29% recommending migration within the first six months. An additional 50% will recommend moving by the end of the first year after its release.
- The vast majority, 94%, said they would recommend their companies transition to Windows 95 within two years.
- Nearly three-fourths, 73%, gave the beta an overall grade of A or B, while 23% gave it a C, and 4% gave Windows 95 a D. The average grade was a B-.

Review of Windows 95 and a look at the 16-bit applications that really run with it. See pages 37, 40 and 41.

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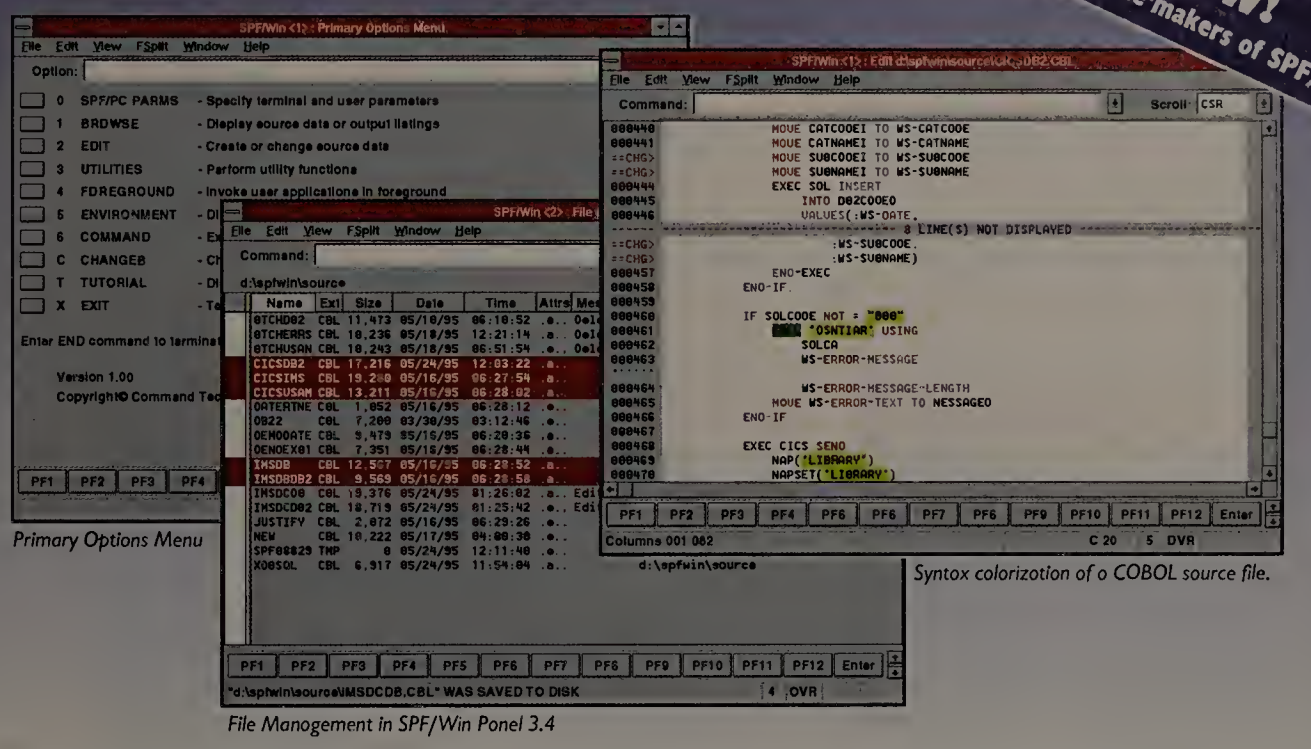

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HP targets home, 'net

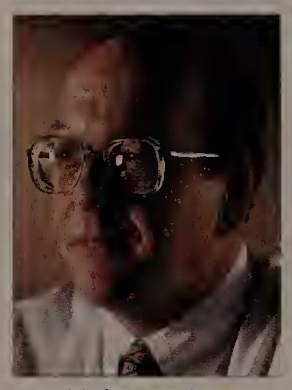
By Jean S. Bozman
and Michael Goldberg
TORONTO

Hewlett-Packard Co., the third-largest computer vendor worldwide after IBM and Fujitsu Ltd., plans to take the No. 1 spot in Unix systems, printers and network management software and is looking for new roles as Internet supplier and home PC vendor.

HP plans to distance itself from competitors by becoming a big player — or volume player — in consumer markets for home PCs and Internet devices. "You have to have volume in these areas," said HP's Chief Executive Officer Lew Platt in an interview last week.

Platt shared some of his vision for the $25 billion firm during an HP users conference here.

Also last week, HP announced revenue of $7.7 billion for its third quarter and $576 million in profit.



HP Chief Executive Officer Lew Platt: *Volume will set HP apart*

On the burner

Highlights of Platt's remarks include the following:

- HP will continue to support Unix for its servers, even as it plans to bring Microsoft Corp.'s Windows NT to future systems based on the HP/Intel Corp. merged chip set. Sun Microsystems, Inc. CEO Scott McNealy recently criticized HP for hedging its bets on Unix.

"We are the leader in Unix [system sales] today, and we intend to remain the leader," Platt said. "Unix is certainly going to take me through my retirement."

- Windows NT, which runs on HP's PC servers, will one day run on PA-RISC servers, too. Platt said HP wants to act as a systems integrator of Unix and NT networks, just as Digital Equipment Corp. promised in its recent alliance with Microsoft [CW, Aug. 7].
- The Internet will be the subject of an HP announcement about a new business unit and Internet-ready products next month. "It's a big growth driver of our business. Look at the people who are buying new servers, OpenView network management software. And a lot of that is being driven by the explosive growth of the Internet. And anything which stimulates demand obviously is good for HP," Platt said.

Updating Old Faithful

HP 3000 gets enhanced MPE/IX, free Web software

By Michael Goldberg
and Jean S. Bozman
TORONTO

In an effort to bring its longtime HP 3000 users into the worlds of open systems and client/server technology, Hewlett-Packard Co. last week advanced a series of new features for its Old Faithful computer line.

The changes include tweaks to its MPE/IX operating system to ease data exchange with Unix servers and free IP software for HP 3000 customers setting up World Wide Web sites. HP officials said they are trying to shore up a core constituency while emphasizing open systems.

Users "would like to see the characteristics of MPE but call it Unix. We're working both sides," said Olivier Helleboid, general manager of HP's commercial systems division. "This is all about bringing open systems to the 3000."

End of the line?

Some customers at last week's Interex '95 HP users conference here said they are worried the moves signal the beginning of the end for the 23-year-old HP 3000 as it blurs in functionality with the Unix-based HP 9000 series. Others said the company is trying to show a commitment to move into the future with users of the proprietary yet reliable HP 3000.

Joe Farrell, information services manager at Airmotive Ireland, a jet engine overhauler near Dublin, said he was assessing HP's strategy for the HP 3000 with a cautious eye. His site has two HP 3000s that support 150 users and about 120 people using HP PCs.

"I want to read between the lines about HP's plans. I want to see what direction we should take our applications," Farrell said. "I think they're surprised by the interest in the 3000, and they're saying, 'Look, the world is going to Unix.' And so they're adopting" a philosophy to coax users along that path.

Jorge Moctezuma, a systems administrator at P.M.I. Comercio Internacional, a commodities trading firm in Mexico City, said he will benefit from the changes to HP 3000. His site has an HP 3000 Model 995 running MPE/IX 5.0 with a Posix interface and HP's Image database.

"Our legacy [HP 3000] system is good, but it's very hard to make quick changes to it," Moctezuma said. "We found another solution in the Unix world, but we also have to live with the 3000." His site has HP 3000 computers and workstations from HP and Sun Microsystems, Inc.

Others were more enthusiastic. Stephen S. Hammond, coordinator of production applications at the Washington-based Association of American Medical Colleges, said he uses HP 3000 and HP 9000 with a Novell, Inc.-based network of 200 PCs.

Hammond said getting networked printers to work with HP 3000s has been a concern HP promised to address this week. An enhanced print spooler for the HP 3000 is due in about six months, HP officials said.

Features galore

The following features were among those announced for the HP 3000 last week:

- Links with mainstream databases. Oracle Corp.'s Transparent Gateway enables an Oracle application user on a Unix-based system to aceess an Image/SQL database on an HP 3000. HP is also working to provide a gateway between HP 3000 users and Sybase, Inc.'s Open-Client and OpenServer applications running on Unix systems by June 1996.
- Distribution of freeware to make MPE/IX portable to open systems. This includes the Free Software Foundation's GNU C++ compiler, available via HP's Internet server.
- Distributed Computing Environment software to integrate the HP 3000 into multiplatform client/server systems.
- Improved print management features for the HP 3000, including page-level recovery for mission-critical applications, which is due in the first half of 1996.
- Plans to develop a version of Innovus Technologies, Inc.'s NetWorker storage-management software for HP 3000 servers to allow these systems to back up Unix-based systems and vice versa.

—Michael Goldberg, Jean S. Bozman

Up, up and away

HP's workforce is 99,990, according to the company's annual report — up nearly 1,600 from the 1994 headcount. CEO Lew Platt said HP had to hire people — for the first time in several years — to keep up with growth.

User poll knocks HP with poor, unacceptable ratings

Survey blasts sales force but shows order processing improving

By Jean S. Bozman
and Michael Goldberg
TORONTO

A survey of nearly 900 Hewlett-Packard Co. users, commissioned by the Interex users' group, found a surprisingly high level of dissatisfaction with HP's sales force.

Users surveyed reported that sales personnel don't provide enough information on upcoming products.

Some 42% of those surveyed said the quality of sales information about new products was "poor" or "unacceptable." Jane Copeland, a user advocate and volunteer at Interex and president of API International in Austin, Texas, said HP isn't properly training its sales force.

But, she added, HP is working to respond to Interex's concerns. "The knowledge level [of the salespeople] is the key issue," she said.

User survey

Local access sought

"I have some problems with sales contact," said one user from a Fortune 50 company attending last week's conference who asked to remain anonymous. "I have to deal with the sales team that is in contact with headquarters, and I'd like to deal with HP locally" because it is more convenient, he said.

However, user dissatisfaction with the way HP processes orders for new systems — a long-simmering Interex issue — appears to be lessening, Interex officials said last week.

"It's turning around," said Interex executive director Chuck Piercey of HP's order-entry system. Last year, he noted, 43% of those surveyed said HP's response was "unacceptable" or "poor," while 34% said so this year.

Piercey said he expects new computer systems for order taking will reverse the problem by 1996.

"In the last year, they have made a vast improvement in their contracts administration" for hardware and software support, said Greg Hartigan, senior technical support analyst at Scott & White Health Plan in Temple, Texas. "They've managed to set it straight."

However, he said some technical support personnel weren't as knowledgeable about HP 3000s as he would have liked.

HP, Intel and others sign 64-bit Unix treaty. See page 45.

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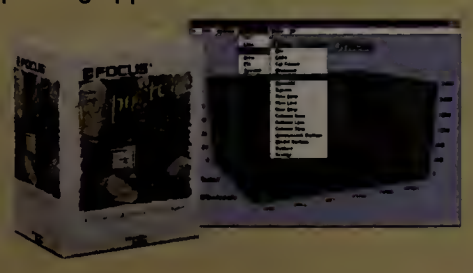

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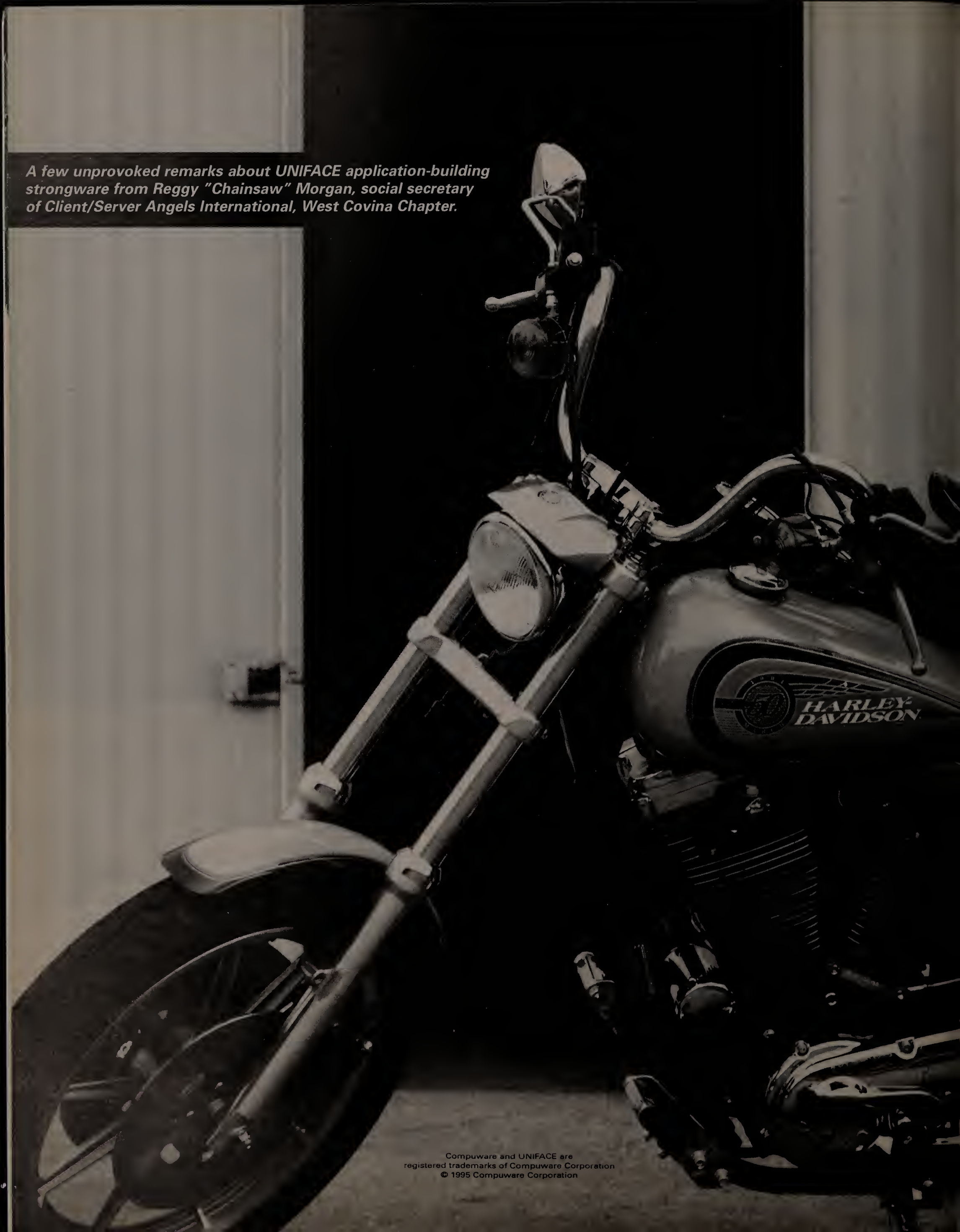

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WHAT THE BIG GUYS USE

VirusScan throws bugs out of Windows 95

By Cheryl Gerber

Several beta testers of McAfee Associates, Inc.'s VirusScan for Windows 95 strongly recommended the product last week as protection against viruses they say can be easily contracted via the Internet access built into the Microsoft Corp. operating system.

"Since Windows 95 makes it so easy to get on the Internet, this software is more important than ever before. You don't know what you are getting when you download. Some home pages on the Internet are screened and some are not," warned Arthur Downey, a beta tester and consultant at PC Consulting in San Antonio.

Windows 95 will be an ideal target for virus writers for the following reasons, according to Scott Gordon, antivirus product manager at Santa Clara, Calif.-based McAfee:

- The popularity of the operating system will provide a vehicle for notoriety among virus writers.
- The new features will present an opportunity to invent viruses.
- The operating system doesn't provide antivirus protection; DOS and Windows 3.1 did.

However, Gartner Group, Inc. analyst Michael Gartenberg, cautioned against being alarmist. "The Internet certainly expands the potential for viruses [and] you're at risk with Windows 95, but it's not a major threat. It takes too long to download software from the Internet, so most people are not going to do it."

Most prevalent viruses in the U.S. this month

Virus	Symptoms
NYB	Causes disk seek errors; reduces available memory
Form_A	Speakers make clicking noise on 24th day of month
Dark Avenger	Randomly overwrites data on disk
Monkey B	Makes hard disk inaccessible
Athens	Corrupts executable programs
Stealth C	Causes memory and operational difficulties
Anti-EXE	Control/break key combination overwrites executable files
1/2.mbr	Encrypts a disk sector each time machine is booted

Source: McAfee Associates, Santa Clara, Calif.

Still, one beta tester said he has already detected two viruses on Windows 95 machines using McAfee's VirusScan for Windows 95. "They are mean," said Bill Heldman, a systems administrator at TomTec Imaging Systems, Inc., a Boulder, Colo.-based developer of cardiac ultrasound imaging software. He has 25 machines beta-testing Windows 95.

"We found a [new] virulent, stealth virus called Natas, which is Satan spelled backwards. It destroyed our hard drive," he said. Heldman also found a virus called Anticmos_A that completely corrupted an .exe file.

VirusScan for Windows 95 supports 32-bit protected operation, long file names, browsers and context menus. Its Windows 95 explorer interface appears as if it were an extension of the operating system.

Unlike its predecessor 16-bit version, AntiVirus for Windows 95 lets users perform virus scans at start-up, on demand, on disk access or via customized scanning options. It can automatically clean the infection or delete the file.

McAfee is scheduled to ship the product today. It will cost $50 per node for 25 nodes and $20.50 per node for 1,000 nodes. An evaluation version of VirusScan for Windows 95 is available on McAfee's World Wide Web site at http://www.mcafee.com, or its bulletin board system at (408) 988-4004.

Windows 95 is here. See stories starting on page 37. **IBM attacks** the virus issue. See page 12.

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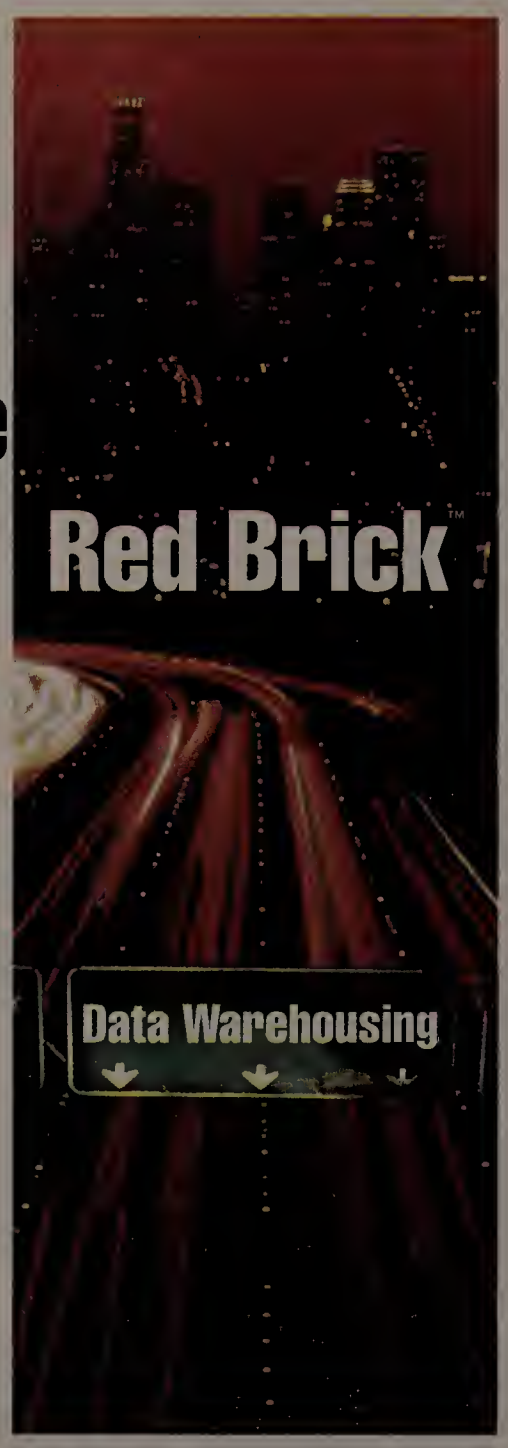

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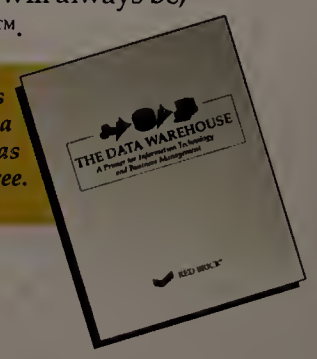

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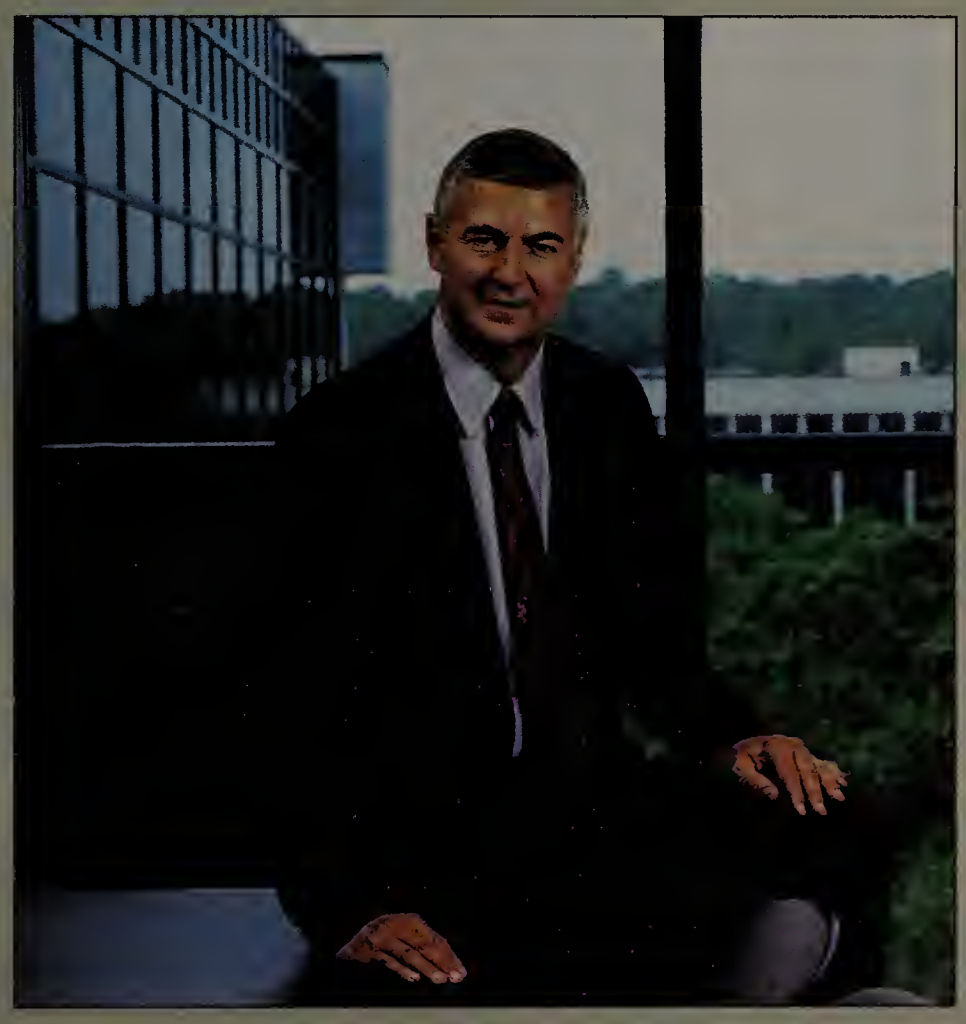

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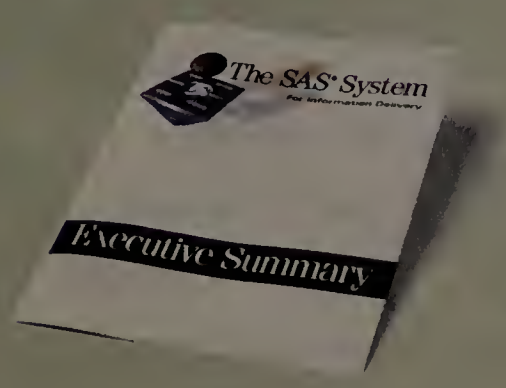

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3Com turbocharges Impact ISDN modem

By Bob Wallace

3Com Corp. last week announced powerful enhancements to its Impact Integrated Services Digital Network (ISDN) modem that will let users boost ISDN performance while remaining backward-compatible with analog modems.

3Com's Impact ISDN modem includes the following enhancements:

- Combines an ISDN Basic Rate Interface (BRI) line's two 64K bit/sec. channels to form a single 128K bit/sec. channel, regardless of modem. This, in effect, doubles line performance. While this was possible before, the modems at each end had to be from the same vendor.
- Uses an internal v.34 (28.8K bit/sec.) modem to connect with the huge installed base of analog modems.

The Impact ISDN modem can bond the two BRI 64K bit/sec. B channels by supporting the Internet Engineering Task Force's multilink Point-to-Point Protocol (PPP). This also means users can connect 3Com's modem to other vendors' ISDN modems.

Impact ISDN modem checklist

New

- Two ISDN B channels
- Works with analog modems

Existing

- One phone port
- Integrated power supply
- Built-in ISDN access unit

Analysts said the ability to mix and match modems will mean guaranteed performance increases for many Impact ISDN modem users.

"Multilink PPP ... is critical for applications such as videoconferencing, which works poorly with just 64K bit/sec. of bandwidth," said Maribel Howard, a research analyst at International Data Corp. (IDC), a consulting and research firm in Framingham, Mass.

One early user agreed with Howard on the need for speed.

"We wanted twice as much bandwidth as we had [with one B channel] for higher-speed access to the Internet and because we're looking at video," said Geoffrey Smith, president of Westco Technologies, Inc., an international chemical wholesaler in San Clemente, Calif. "It's a fabulous [capability] because you can do so much more so much faster."

Numbers

3Com said it has sold 2,500 to 3,000 Impact modems since the product began shipping earlier this year. IDC estimated that roughly 10 million analog modems shipped last year.

Smith said being able to use ISDN modems in analog environments was also important.

ISDN modem users lose certain proprietary features while supporting multilink PPP, such as high-speed data compression, but analysts said gaining interoperability is much more important.

The analog interoperability will also be valuable to users.

"There are a lot of analog modems out there without ISDN capabilities that we may need to [work with] whether it's an Internet service provider or a remote user," Smith said.

The Impact ISDN modem with multilink PPP support is priced at $649. A factory upgrade costs $129. The analog modem interoperability feature is available only with new Impact models.

ISDN is popular in Europe, which is gearing up for telecommunications reform. See page 54.

"Typically, when we had an important event coming up, we would rely on a mailing to our own database as the prime vehicle for getting the information to the people we had targeted.

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It worked very effectively in creating awareness of the conference and building preference for Hewlett-Packard programs."

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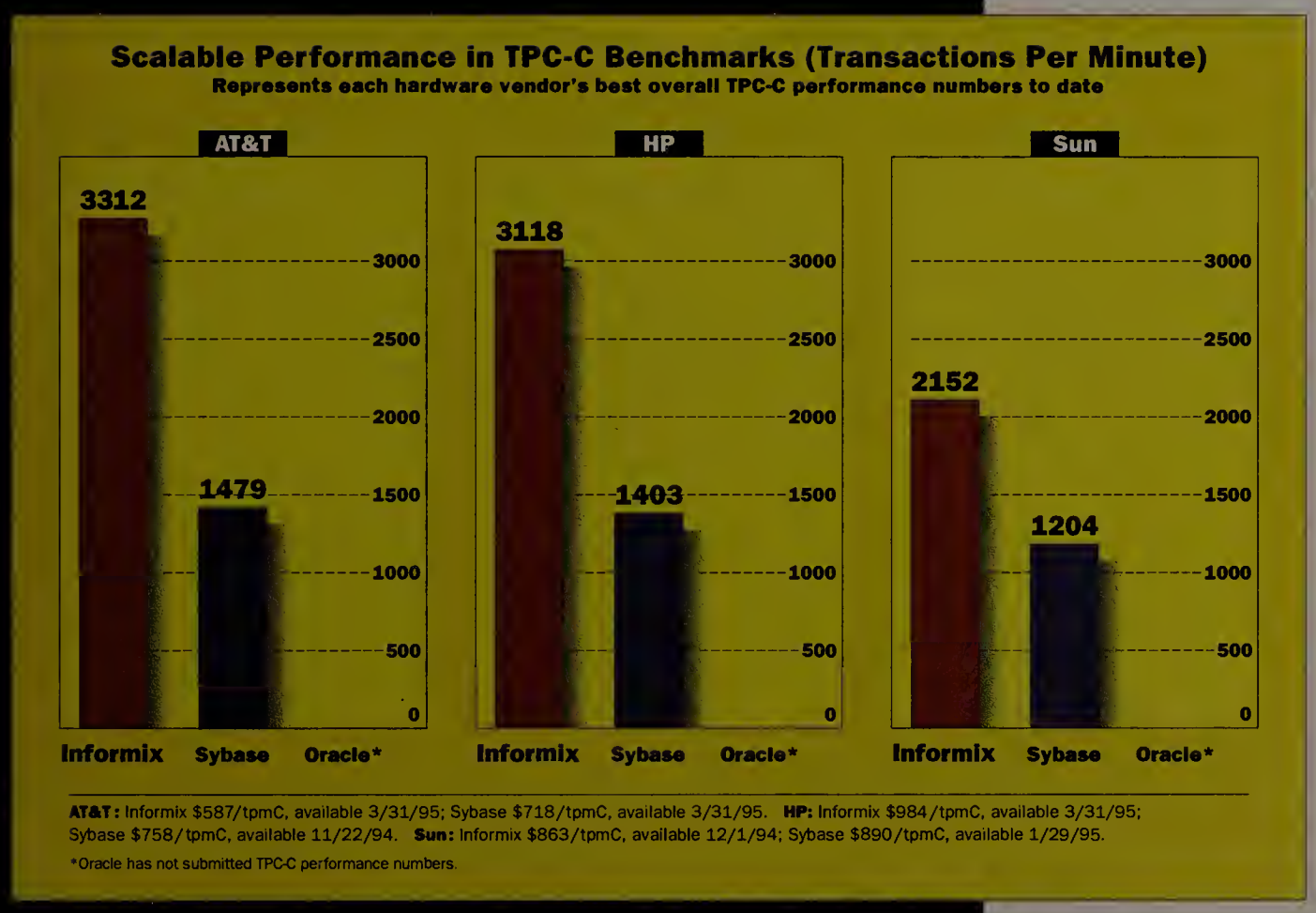

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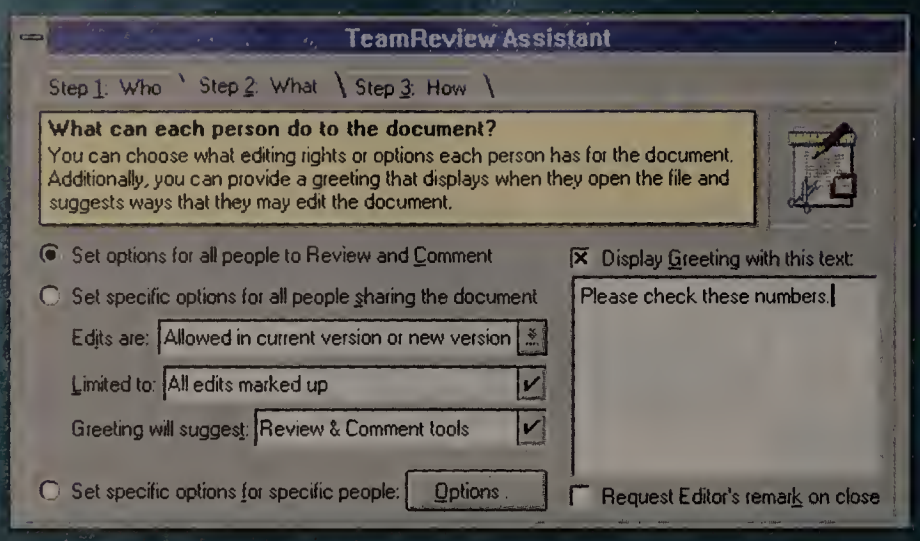

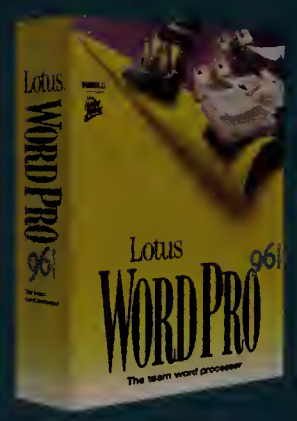

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MILLENNIA PUBLISHING ASSIGNS LAUNCH OF NEW TEEN ~~NOVEL~~ Series TO SASSO SKIFFINGTON

PORTLAND...Millennia Publishing of Springfield has assigned the launch of its new ~~Series~~ of teen novels "The Carlin Twins" to Sasso Skiffington Advertising, Inc., of Portland according to Sarah Davis, Millennia's VP of Marketing. The account was assigned without a review. Billings are yet to be determined.

VICE PRESIDENT

Series

Shouldn't we disclose this? It can only help us!

Isn't this confidential?

"The Carlin Twins" is a series of 12 novels written by famed mystery writer Jason Geddis, author of such titles as "Mystery on East Fourth Street" and "The Good, The Bad and The O.K." Geddis, a professor of English at Saint Ann's University, was nominated for the Youth Writer's Guild Author of the Decade Award in 1990

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FOR WHAT WORK?

Sasso Skiffington will create TV, radio and transit advertising to support the launch. The :30 television commercial which will kick off the launch, directed by Mike Piro of Monument Films, ~~is being debuted~~ debuts at the Spectacle Show in Dallas in February. Creative credits belong to Executive Creative Director Chris Poulin, Copywriter Kate Carr and Art Director Steve Gibbons.

Sasso Skiffington Advertising, Inc., with offices in Portland and New York, was established in 1979, employs ~~[illegible]~~ people and reported billings of $122 million in 1994.

105

Check this

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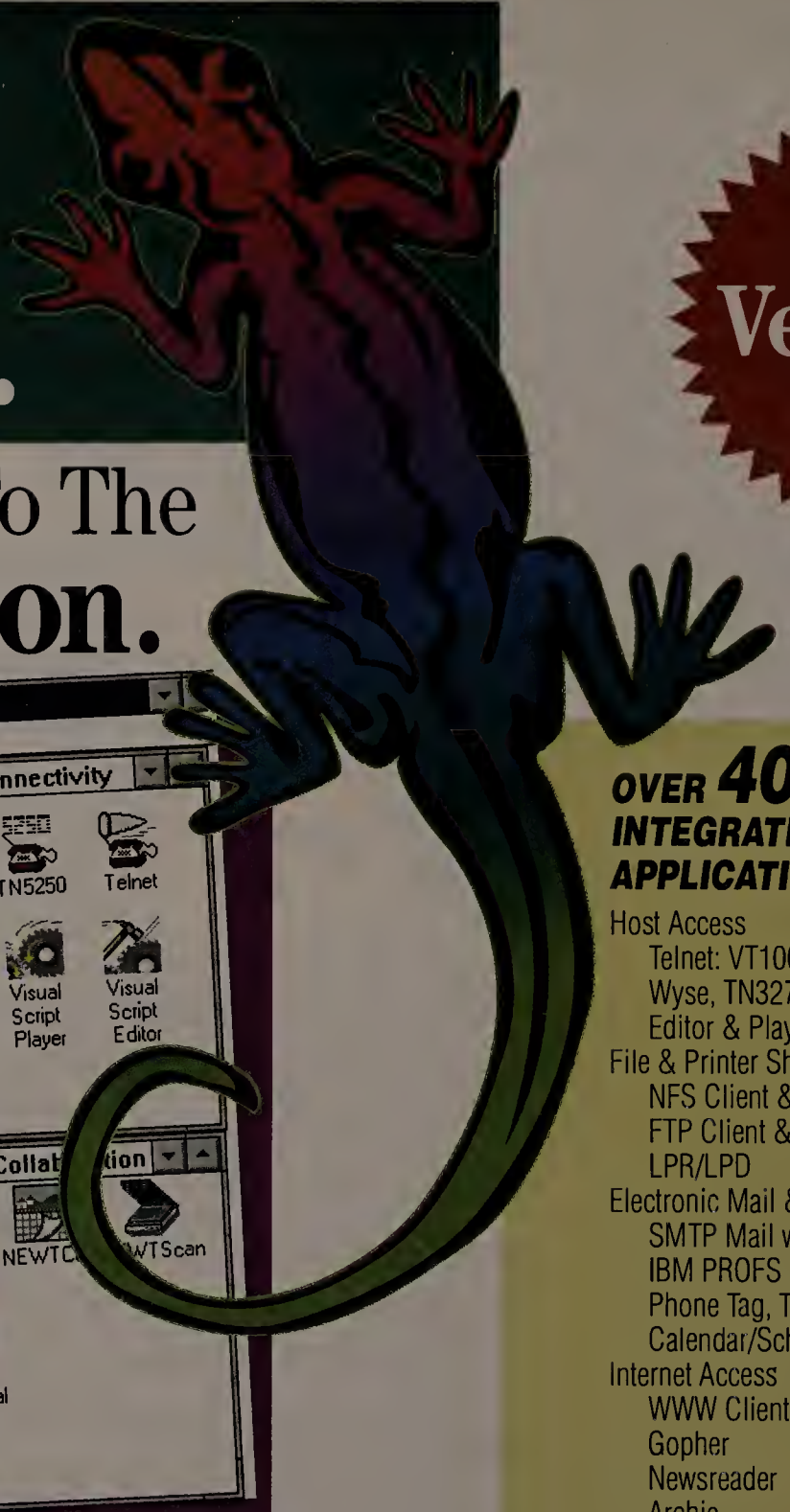

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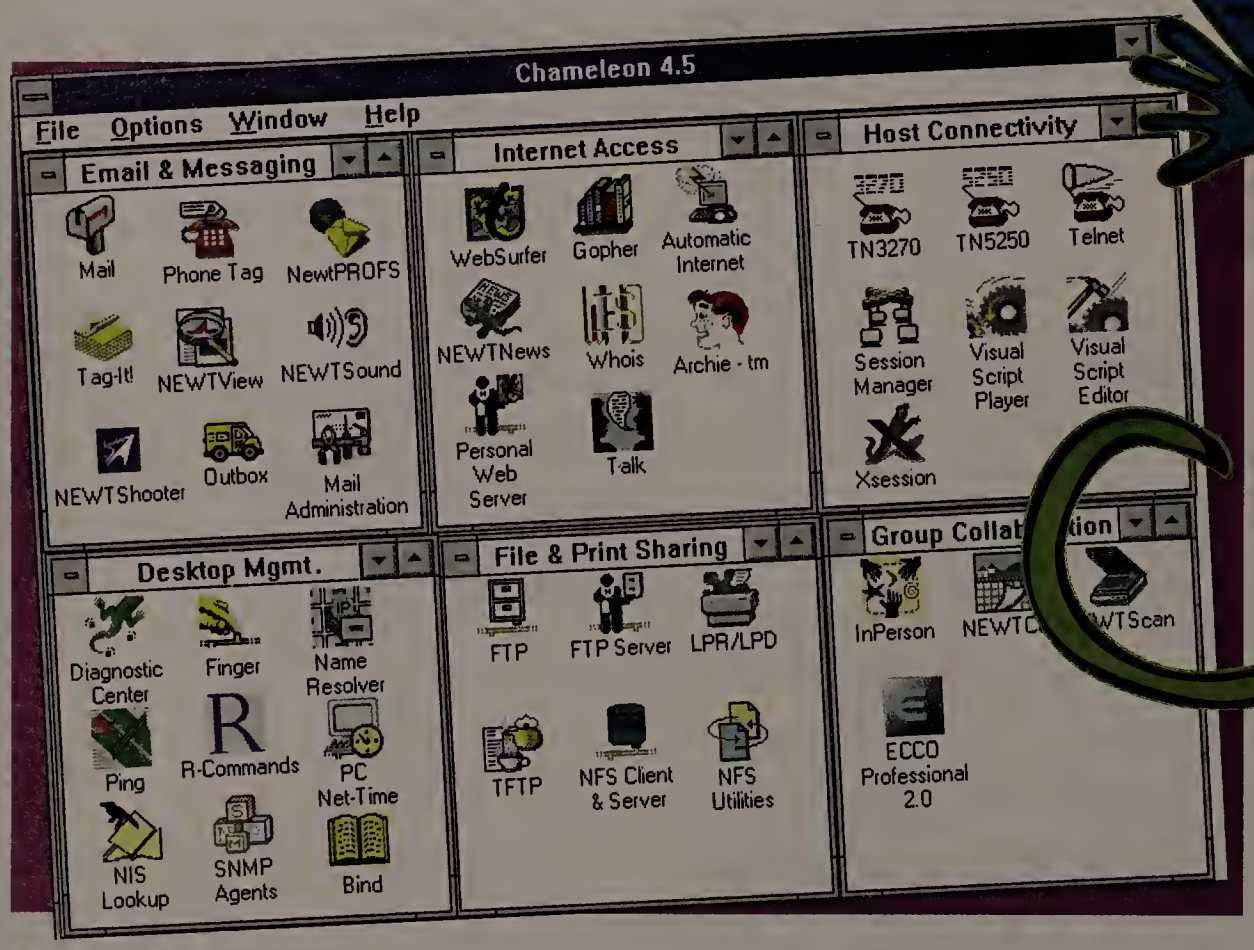

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Computer Industry

Slow PDA sales force Motorola to downsize

By Mindy Blodgett

A slower-than-anticipated market for personal digital assistants (PDA) prompted last week's decision by Motorola, Inc. to downsize its wireless data group staff, industry observers said.

Motorola in Schaumburg, Ill., is expected to cut or reassign 180 workers — about 20% of its staff — from its wireless data group, which makes portable communications products such as Marco and Envoy. Motorola declined to confirm the reported numbers.

Motorola *hopes a new advertising campaign for Envoy will help to perk up sales*

Strategy overhaul

While the cuts reflect that the PDA market is developing more slowly than expected, Motorola has said from the outset that it was investing for the long haul. Still, it appears to have revamped its strategy. Company officials said they will focus on promoting existing products and veer away from new product development.

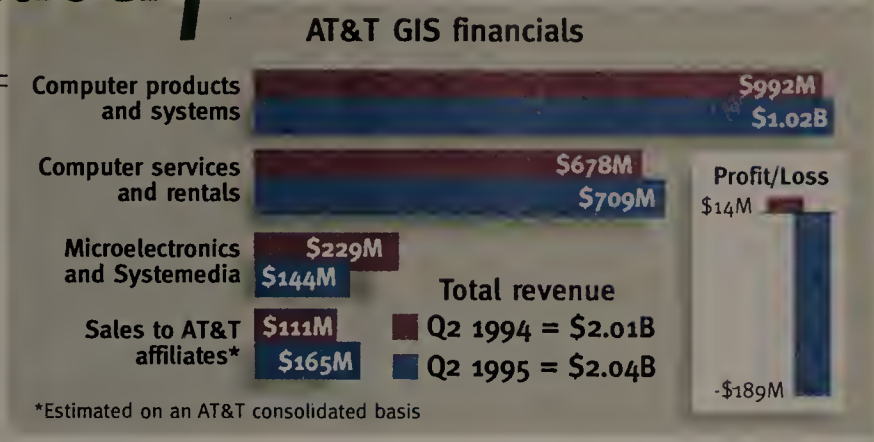
But there is a silver lining: Motorola, unlike AT&T Corp., isn't withdrawing from the market. "The good news is that we will be starting a major new advertising campaign for Marco and Envoy," said Mil Ovan, a marketing director at Motorola.

Marco, a clone of Apple Computer, Inc.'s Newton, costs between $900 and $1,400 for a personal organizer with built-in messaging. Envoy, which is based on struggling General Magic, Inc.'s Magic CAP operating system, allows data transfer, messaging and access to on-line services. It costs between $1,000 and $1,500.

Iain Gillott, an analyst at Link Resources Corp. in Austin, Texas, said Motorola was smart to cut its losses but shouldn't expect miracles. "Marco and Envoy are very nice little computing devices, but users just aren't convinced, and may never be, that they need them," he said. Price has also been an issue, he added.

"People just don't want to pay $900 for a PDA when they can get a subnotebook that offers so much more for not all that much more," Gillott said.

Samuel May, an analyst at The Yankee Group in Boston, said Motorola's actions are a reality check. "The PDAs have been a colossal failure when measured against the hype," he said. "They need to get down to the real business of providing real tool sets of solutions."



AT&T GIS to cut jobs

Continued losses force downsizing action

By Neal Weinberg

AT&T Global Information Solutions, under Chief Executive Officer Lars Nyberg, plans to drop a downsizing bomb by the end of next month.

Responding to a $189 million second-quarter loss, AT&T GIS on July 28 sent a memo to employees notifying them that a major restructuring was in the works.

"That loss continues an unacceptable earnings trend that makes it imperative for us to take decisive action to focus our business and reduce our cost structure," the memo said.

Financial setbacks

The memo, which came to light recently, reflects the unit's struggle to turn a profit in the past several years. Under former CEO Jerre Stead, AT&T GIS was moving slowly toward breaking even. But the loss set back that effort.

A spokesman wouldn't disclose how many jobs will be cut from the 46,000-person workforce, but the memo said department heads are working out the details. Pink slips should go out by the end of next month.

Nyberg, who has kept a low profile since joining the Dayton, Ohio-based company in May, is under orders from parent company AT&T Corp. to return the unit to profitability, said Gene Lee, an analyst at International Data Corp. (IDC) in Mountain View, Calif.

Chris Christiansen, an analyst at IDC in Framingham, Mass., said the company's revenue picture isn't a disaster, but it does have "a profit problem." Lee said revenue has been hurt, in part, because the company is late delivering a high-end replacement for its symmetrical multiprocessors.

Lee said AT&T GIS will focus on its most successful areas: financial, retail and communications. It will de-emphasize, but not eliminate, public sector, transportation and consumer goods manufacturing. AT&T confirmed the plan.

Microwave technology lures new users

By Laura DiDio

Microwave Bypass Systems, Inc. is seeing its niche market rapidly expand as customers rediscover microwave technology, which was first invented in the 1960s.

Ethernet LANs

Microwave Bypass, a 10-year-old wireless microwave pioneer in Hingham, Mass., manufactures full-speed Ethernet microwave LAN devices.

The company has gained a following among hospitals and universities with large campus networks, school districts, military bases and the government.

Bill Mountjoy, director of information services at the Service Employees International Union in Washington, discovered microwave when the labor union needed to link 300 users in two buildings.

The organization originally wanted to go with fiber-optic links but scrapped that plan beeause the service cost $2,000 a month.

At $15,000 per link, microwave equipment is 50% to 70% cheaper than leased lines, according to Eric Hindin, a program manager at The Yankee Group in Boston.

Despite the low cost, Mountjoy said he was initially skeptical. "I thought the crazy weather patterns in Washington, D.C., would disrupt the microwave signal. That hasn't happened; we've had 100% uptime over the past year," he said. "The microwave links only cost me $28,000, and unlike leased lines, I own the equipment."

The company's installed base now stands at 1,500 users. A profile of the company by Aberdeen Group, Inc., a Boston consultancy, said Microwave Bypass is "the unchallenged leader" in the Ethernet microwave LAN market.

"Microwave Bypass has solid technology, robust products and a current market share of 75% to 80%," said Virginia Brooks, Aberdeen's manager of network access technologies.

Phillips Laboratories at Edwards Air Force Base in the Mojave Desert installed microwave links about three years ago to simultaneously transmit a mix of Ethernet, video and T1 data, said one Air Force network administrator who requested anonymity.

Although the company's installed base seems content, Microwave Bypass can't rest on past laurels. To attract new business, founder and President David Theodore said Microwave Bypass must educate users.

"Many people erroneously lump all wireless technologies together or confuse microwave with infrared and spread-spectrum devices," Theodore said. "Another great myth is that adverse weather conditions like rain and dense fog will disrupt the signal — and those issues don't impact microwave technology at all."

Users and analysts have praised Microwave Bypass' service and support.

"They're very customer-oriented," Mountjoy said. "They cut their normal installation time from 60 days down to under 30 days to get us fully operational."

Brooks said that for Microwave Bypass to grow, it needs to make technology alliances with large internetworking vendors.

Microwave Bypass Systems
Hingham, Mass.

Users:
About 1,500

Products:
The LAN-Link 1000 Ethernet Bridge, which transmits voice, video or data over microwave links at full 10M bit/sec. for up to 12 miles

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Editorial

Slow speed ahead

If there is one truth apparent to me after covering the information technology business for 14 years, it is that just about nothing happens as quickly as people expect. If the hype and bluster over the years were to be believed . . .

- Mainframes would be dead and buried. Instead, demand for mainframe MIPS will increase next year for the third consecutive year.
- Personal digital assistants would proliferate in the mobile workforce. Instead, they litter the desktop landscape as expensive paperweights.
- Object programming and fifth-generation languages would predominate the development scene. Instead, an ancient dialect called Cobol remains the most commonly spoken programming language.

- Client/server would be the dominant paradigm for running mission-critical applications. Instead, best guesstimates show that no more than 25% — and likely less — of such applications are client/server enabled.

I could go on ad nauseam. Unlike the human aging process, nothing in this business happens as fast as it's supposed to. Why? This is a particularly good point to ponder this week, as Microsoft's Windows 95 looms. This software, we are told, will fast become the corporate desktop paradigm.

But it won't do so quickly, if at all. And not because there's anything inherently wrong with the product, just as there isn't anything inherently wrong with many client/server setups.

Rather, what holds back the adoption of new technologies is both simple and vexing. It is the part of the IS environment that soaks up 75%-plus of the IS budget. It is people.

Many don't have the right skills for the technology *du jour*. Some have a can't-do or won't-do attitude when it comes to change (there's a little of that in most all of us). Few employers have the resources or willingness to invest in retraining.

Veteran IS managers hold such truths to be self-evident, that all new technologies are created equal — and equally daunting when it comes to actually putting them to work.

Bill Laberis

Bill Laberis, *Editor in chief*
Internet: *blaberis@cw.com*

Foreign talent: Yes and no

I agree with Harris N. Miller's "Don't close the door on immigrant programmers" [CW, July 10]. The U.S. must not bar skilled aliens from working for American companies.

However, there is a problem in separating the truly skilled worker from semi- or unskilled computer people. Fortunately, vendors, ISP 9000 and the Institute for Certification of Computing Professionals (ICCP) are doing something about it. ICCP requires four years of information systems employment and the passage of an eight-section examination to earn a Certified Computing Professional designation.

Let's make America No. 1 in information systems professionalism.

Leonard F. Turi
President
TMS Consulting Services, Inc.
Farmingdale, N.J.

I take great exception to "Don't close the door on immigrant programmers."

It is clear that Harris N. Miller's interests are not with the programmers of this country. He is concerned about the welfare and profits of his organization and his clients and sees programmers as a commodity. The more programmers there are, the cheaper they will become.

This country has a right to restrict legal immigration and deter illegal immigration. If flinging the doors wide open to programmers is such a boon to competitiveness, why haven't the countries in Europe aggressively imported relatively cheaper American talent? Why hasn't Japan?

I think the limits proposed by Congress are extraordinarily fair and reasonable. I will urge my [representative] in Congress to support these restrictions.

Geoffrey K. Wascher
Utica, Mich.

How about this?

"Top 3 on-line providers plead for Microsoft mercy" [CW, July 24] prompts me to propose this to the major on-line services and Bill Gates:

Don't unbundle The Microsoft Network (MSN) from Windows 95. Rather, do bundle America Online, CompuServe, Prodigy *and* MSN with Windows 95 and let those who acquire it try before they buy. Let the customers decide.

Alfred Riccomi
Richardson, Texas

Narrow view

Computerworld's objectivity just took a nosedive for me with "3Com eyes ATM, ISDN markets" [CW, July 10].

A customer testimonial from Anna McKinnon, director of technology at Anderson & Lembke, supporting 3Com's acquisition strategy reads, "We're excited about the move into remote access, and acquiring known entities also helps them get products to market more quickly."

Well, no wonder Anna's excited. Anderson & Lembke is 3Com's advertising agency, and they get a boatload of new assignments every time 3Com gobbles up another company. And the quicker 3Com gets those new products to market, the quicker Anderson & Lembke gets to build out that swank new office space they're moving into.

Of all the potential 3Com customers, why did you have to depend on one so obviously vested in 3Com's continued success? Not exactly an unbiased opinion, I would say.

Peter Mackey
San Francisco

Too late

I think you got the numbers reversed in "Random thoughts" [CW, July 10]. Windows 95 is OS/2 Version 0.4, not Version 4.0.

OS/2 is a mature product that I've been running since June 1992, while Microsoft's Windows 95 still doesn't exist. And we both know that the first version of any new operating system is little more than a really wide beta.

Even Microsoft is saying that by 1998 users will be expected to move into the Windows NT environment. Not much of an upgrade path!

Keith Wood
Cottonwood, Ariz.
keithw@sedona.net

■ Computerworld welcomes comments from its readers. Letters should not exceed 200 words and should be addressed to Bill Laberis, Editor in Chief, Computerworld, P.O. Box 9171, 375 Cochituate Road, Framingham, Mass. 01701. Fax number: (508) 875-8931; Internet: letters@cw.com. Please include an address and phone number for verification.

August 21, 1995 • Volume 1, Issue 7

COMPUTERWORLD

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The Eastern Road to IT

BY SHUJI HONJO

Since the end of World War II, the most popular metaphor used to describe Japanese corporations has been a machine: powerful, predictable and subject to the laws of the physical world. A machine can be fine-tuned and exactly controlled. Continuous improvement and quality control have been corporate mantras, and employees have been cogs in the organizational wheel.

A machine, however, is inflexible. In the late 1980s, as Japan's economy slowed and international competition intensified, traditional human resource management practices such as seniority-based promotion, lifetime employment systems, time-consuming approval procedures and ineffective communications began to strain the corporate mechanism. The information technology

Japan perfected TQM and started a global revolution. Now, a few cutting-edge companies are developing a uniquely Japanese approach to IT management that will create a new competitive advantage. Two companies, Itoyokado Group and Kao Corp., stand out as prime examples.

environment, still largely mainframe- and custom software-based, also began to show signs of fatigue.

Many Japanese companies could no longer compete in terms of cost and quality alone. Value-based competition became the new watchword. Companies realized they had to do a better job of providing the customer with superior design, greater variety and improved service.

With a new business model comes a new metaphor: the organization as living organism — flexible, adaptable and able to learn from experience. By tapping the vast store of human creativity that was held in check during the past 40 years and by redefining the role that IT plays in this transformation, Japanese corporations are now remaking themselves.

Integrating human capital with information technology is critical. As employees are freed to ask questions and spend more time on creative work, they need technology that will enable them to create value.

A few leading-edge Japanese companies are remaking IT as a tool in the creative process. They are networking distributed end-user computers with central data warehouses, allowing workers to analyze data, make decisions and respond rapidly to market changes. Such access would have been unthinkable in Japan just a few years ago.

Unlike many U.S. companies, this new breed of Japanese companies takes advantage of but does not depend on technology. These companies do not covet cutting-edge technology but instead focus on gathering, understanding, interpreting and applying information and fully utilizing human capabilities. This article looks in detail at two such path-breaking firms: Itoyokado Group and Kao Corp.

Cover and inside illustrations by Keith Ward

Itoyokado Group

The objective of Itoyokado, the $30 billion owner of the 7-Eleven franchise worldwide, is information dominance. Itoyokado's operating profit is 7.3% of revenue, while that of its biggest competitor, Daiei Group, is only 1.6%.

Itoyokado's 7-Eleven operations in Japan are based on the managerial principle that ordering stock is the retailer's — not the vendor's — business. Ordering, Itoyokado says, is the key to offering the right amount of the right products at the right time. In other words, it is the key to the company's value for the customer.

Orders are made and goods are delivered three times a day, which allows 7-Eleven Japan stores to change their shelf space layout and

Kao Corp.

Kao, a $7 billion supplier of soap, cosmetics, detergent, disposable diapers and other consumer products, has a formal corporate philosophy: Everyone, regardless of position or experience, must contribute his intelligence to achieve the corporate purpose of developing and using "innovative technologies to create products that are useful to society and offer real consumer value."

The philosophy seems to be paying off. Kao's operating profit in 1994 was 8.3% of revenue, while that of its major competitor, Lion, was only 1.5%.

Yoshio Maruta, Kao's former chairman, set out in the 1980s to shape the corporation to exhibit biological self-control, capable of responding to crises, just as the body

product mix every eight hours. Employees spend about half their time ordering, and store managers distribute this task among many part-time employees.

Because its information and knowledge of customers' preferences surpasses that of vendors, 7-Eleven Japan leads vendors in product planning and development, called team merchandising. This is a major departure from the traditional Japanese retailer's business model.

During the past several years, Japanese companies such as $8 billion retailer Seibu and $6 billion manufacturer Ajinomoto have been students of Itoyokado. Wal-Mart, too, has formed a relationship with the company: Wal-Mart supplies Itoyokado with merchandise, and Itoyokado shares its management know-how with Wal-Mart.

Surprisingly, Itoyokado outsources its information systems management to Nomura Research Institute in Tokyo. All 5,800 7-Eleven Japan stores are connected to the host computer in Tokyo through 10 node processors in three locations with Nippon Telegraph and Telephone's largest Integrated Services Digital Network. Node processors work as data storage and as a data gateway with vendors.

Tanpin Kanri

Itoyokado achieves information dominance and rapid customer responsiveness by taking full advantage of information management. A case in point is the company's detailed item-level merchandise control system, known as *Tanpin Kanri*, which means "management by single product."

The *Tanpin Kanri* system allows each 7-Eleven Japan store to control merchandise —from ordering and logistics to inventory control and merchandising decisions — at the level of a single product, such as just one Hanes T-shirt or a single package of Kleenex tissues.

For example, while most competitors might be able to order a dozen Hanes T-shirts, 7-Eleven can order, distribute and control inventory for one small, 100% cotton, white, sleeveless Hanes T-shirt.

Such granularity enables 7-

does, by fighting back. He said he believed that when a problem arose, people should think and react without being told what to do.

To this end, Kao tries to instill in its 7,200 employees a strong sense of inquisitiveness and creativity, encouraging them to question everything. The company has a policy of rotating people through various jobs so that while they are developing multiple skills, they are also constantly evaluating procedures and suggesting new ways to organize and operate.

KAO EMPLOYEES NO LONGER ADDRESS ONE ANOTHER BY THEIR TITLES — A RADICAL DEPARTURE FROM TRADITION THAT HAS HELPED THE FIRM DEVELOP A STRONG, UNIQUE CORPORATE CULTURE.

Kao's current chairman, Hiromi Nakagawa, has added the technology component to Maruta's philosophy. He has stated that "by providing tools, we let people have more time for creative work." Such tools include a computer terminal for each employee and a pen-based computer (for data collection, analysis and simulation) for each store manager. These tools, Nakagawa says, encourage organizational agility.

Formal informality

Information sharing is a key to Kao's organizational agility. Kao became one of the first firms in Japan to stop requiring employees to call one another by titles — a radical departure from tradition. Such a mandate helped develop a strong, unique culture and added excitement and passion to employees' work attitudes.

Technology plays a key role in the company's information-sharing philosophy. Kao recently deployed DB2 on an IBM mainframe connected to Unix servers in procurement, production, logistics and sales. DB2 applications provide users with real-time access to sales forecasts, daily retail sales data, inventory data and customer comments. The system is linked to marketing and planning databases. The result: Each Kao worker can access and use cross-functional data from his own desktop computer.

Applying IT to business operations has allowed Kao to coordinate sales, distribution and manufacturing. Its Logistics Information System (LIS), a combination sales planning system, production control system, on-line inventory control system and physical distribution system, allows management to monitor retail sales closely and adjust inventory levels at its distribution centers daily.

Factories, too, can access the LIS

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Eleven to capture maximum selling opportunities and, at the same time, minimize the cost of operation by precise forecasting and inventory control at each store. In short, every 7-Eleven store carries only those products that customers will purchase immediately.

As for hardware, employees at all 7-Eleven Japan stores use Graphic Order Terminals (GOT) to enter orders and display product data. The terminals are networked to vendors, distribution centers and trucking companies. The GOTs provide not only sales, inventory and product delivery dates but also information on special events such as festivals and holidays, weather and anything else that might help employees make better decisions about what to order.

Itoyokado centrally captures GOT data from each 7-Eleven Japan store in real time. At each point of sale (POS), an employee records the transaction and enters customer profile data, which is fed to the central database. Management then analyzes the aggregated product and sales information and adjusts product mixes if needed.

THE WEST IS LEARNING FROM JAPAN'S IT LEADERS. WAL-MART SUPPLIES ITOYOKADO WITH MERCHANDISE, AND ITOYOKADO SHARES ITS MANAGEMENT KNOW-HOW WITH WAL-MART.

Communication key

For Itoyokado, communicating data to all stores is just as important as gathering and analyzing it. Instead of relying solely on IT-based communications, Itoyokado holds weekly meetings in Tokyo of 750 operation field counselors (OFC), who represent the 5,800 7-Eleven stores throughout Japan.

The meetings help the company develop team proficiency. For example, OFCs and staffers from headquarters will discuss one OFC's question until they reach a solution. Ideas that one store develops and implements are often tested at other stores.

The company claims that the results of the OFC meetings justify the transportation costs and time investments of hundreds of managers.

For example, at one weekly meeting, a field counselor reported that pet food sales at seaside stores were strong. Headquarters conducted a chainwide analysis and found that people who plan to go fishing buy pet food on days that have especially high tides. Thanks to increased sales and inventory data to coordinate production. And tapping in to the same system, Kao's logistics center can simulate production, distribution and sales loads to quickly determine optimum solutions.

Kao's attitude toward sharing data extends to its suppliers and customers. In 1970, the firm formed a *keiretsu* of wholesalers through which it distributes 80% of its products. Kao has a majority interest in these wholesalers, which are headed by Kao's regional sales managers. As a result of the *keiretsu*, Kao's order fulfillment is the fastest in the industry (24 hours or less to 280,000 retail stores) with the fewest errors (0.1%).

Because the company says it believes the success of its retailers leads to its own success, Kao has been supporting and working with retailers for better merchandising since the early 1980s. For example, not only did Kao and Jusco, a major Japanese retail chain, adopt an electronic data interchange system, but Kao also designs Jusco stores' shelf space.

For customer and market information, Kao has a powerful tool set that includes two databases: Echo and the Management Intelligence System (MIS). Echo is the company's product information database for assisting customer service phone operators with pictures and information on products. Echo also files more than 400,000 pieces of qualitative information gleaned from some 50,000 customer phone calls a year.

Marketing, research and development and production staffers have access to Echo, too. Marketers use it to gather market data, production staffers check Echo for customer complaints, and R&D staffers search it for new product and product improvement ideas. Such initiative enhances organizational agility.

The MIS database includes available POS data, advertisement data, consumer surveys and data on other buying habits, as well as purchase data on Kao's and competitors' products. Using MIS, employees can perform marketing simulations and link to a lo-

inventory, seaside stores can increase their pet food sales the day before these very high tides.

Another field counselor reported that his area's POS data showed that *Men's Nonno*, a men's fashion magazine, is more often purchased by women than men. A chainwide analysis by headquarters confirmed this, so 7-Eleven Japan relocated the *Men's Nonno* display between the women's and men's magazine shelves. Sales soared.

While Itoyokado boasts of its GOT and other advanced IT tools, it clearly emphasises human capabilities. It develops and motivates people, converting them from machine parts to independent, thinking value creators.

Employees take responsibility; they are encouraged to question, to analyze data and to develop and test hypotheses. In so doing, they transform data into knowledge and intelligence, thereby maximizing sales. ♦

gistics database for actual planning.

Combined with a philosophy of questioning everything, these databases contribute to new product decisions. For example, market analysis based on Echo and MIS persuaded management to develop a concentrated detergent. Lion had had the same idea earlier, but its management had not pursued it. Acting decisively, Kao ensured the success of its concentrated detergent, Attack, in part by launching it well before competitors reacted.

Kao pays strict attention to IT training, including providing classes on people management. More than half of its non-IS employees have received IT training, including classes in PC operations, document management and presentation. At the same time, Kao has moved IS professionals into line organizations so they can participate on teams and offer suggestions for integrating IT into business operations. ♦

Holistic and organic

The new Japanese business model represented by Itoyokado Group and Kao is both holistic and organic.

It is holistic because the model integrates the human element of business with technology. Both companies regard information and communication — not technology — as the keys to building organizational knowledge and creating value. They leverage human capital with powerful technological tools only where appropriate. They focus on creating a culture in harmony with corporate objectives before they apply technology. And they take empowerment, skill development and job rotation very seriously in developing human capital.

The model is organic because it allows for the rapid change in products and services as well as for organizational adaptation to new environments. Like living organisms, firms organize around corporate objectives. And they continually renew themselves in response to their markets and competition. They also have a central nervous system: All parts of the organization are linked by data, interacting with and reacting to one another.

Both companies also seek revenue and value creation rather than just cost reduction. In a break from the past, they regard people as the source of value and make understanding the customer a primary objective.

At a bare minimum, winners in tomorrow's business world will have the best people and will ensure they are utilized to their absolute best advantage. IT will play the roles of enabler and facilitator at these companies, not act as a be-all, end-all solution to a business problem.

Of course, many Japanese companies are still immature in their IT practices and will struggle for several years. But a growing emphasis on people and value will actually play to Japan's core strengths of quality and speed and will power the country's competitiveness. ♦

About The Author

Shuji Honjo is manager of corporate planning at CSK Corp. in Tokyo, one of the largest professional services firms in Japan, specializing in outsourcing, systems development and systems integration. His career includes consulting and venture capital around the Pacific Rim. Honjo has co-authored three books and numerous articles on innovation and entrepreneurship in major journals in Japan and in the U.S. His Internet address is honjo@st.rim.or.jp.

Computerworld Leadership Series: *Editor: Bruce Rayner, Managing Editor: Joyce Chutchian-Ferranti, Designer: Dan Beard, Copy Editor: Kimberlee A. Smith. For article submissions, contact Bruce Rayner at (508) 820-8195 or E-mail brayner@cw.com. For reprints, call (508) 820-8125.*

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What this column needs is a title

Michael B. Cohn

The titleless company fad is a disaster for IS, where the job title is king.

We information systems types think we're pretty liberal. When the world wore wingtips, we sported sneakers. While others carpooled, we telecommuted.

But one new wrinkle in the workplace scares me aplenty. It's the notion of *titleless* companies. Some organizations, including Tessco Technologies, Inc. in Hunt Valley, Md., and the American Dietetic Association in Chicago, have actually done away with titles. No bosses. No protocol or middle managers. No "sniffing up" or corner offices. Everyone nauseatingly rolling up their sleeves and pitching in.

For high tech, this fad spells nothing but trouble. Titles mean the world to us; it's how we run our business. Some folks spend deeades finally becoming a CASE Encyclopedia Custodian or Senior Business Transformation Engineer, even if they don't know what it means and can't fit it on a business card.

Don't fall prey to this foolish fad. Whether you're a high-tech company of four or 4,000, you need titles. Without them, how would you handle everyday challenges such as the following:

Organization charts. We *need* complex, six-level, dozens-of-dotted-lines organization charts. It's an unwritten law in IS. But a *titleless* organization chart? What is it, just one long row of boxes? It's ugly! It's humiliating! How do you measure success? Where do you fit in the organization? "Oh, that's me, 21st box from the left."

Recruiting. How do you hire in high tech without titles? Is it easier to advertise for Programmer or "Someone who will have a tiny cubicle, take nonstop abuse and go home every day at 2 a.m."?

Systems administration. You can't have people running rampant on the system. System authority must go only to a handful of folks with specific titles (and possibly a few hundred strange IDs that sneak in on the Internet).

If you think everyone is equal, then go ahead and dispense with titles. But if I were you, I'd make darned sure that some *addresses* are still more important than others.

Finger-pointing. In high tech, someone has to take the heat. Who'll answer to stockholders when the system is down for a week? Who'll tell the IRS when last year's W-2s accidentally show up as next year's W-2s?

And imagine the help desk when some irate user screams, "Let me talk to your supervisor!" Should you cheerfully reply, "Oh, we don't have supervisors. We're now all equals in the cosmic scheme of customer service"?

Users. We've got to be able to differentiate us from them. Otherwise, they'll waltz into our computer room. They'll mess with our MIPS. Without titles, how could you tell us apart? Who would we fight with at meetings?

Climbing the ladder. The bottom line is that we *live* for titles. Programmers dream of being Analysts. Systems Programmers long to be Database Administrators. But take away titles and you paralyze advancement. You destroy initiative. Without titles, there'd be no promotions, and people would be stuck doing the same job, day after day, year after year.

Then again, around here, I don't know how you'd tell the difference.

Cohn still works at a large computer company in Atlanta, where users refer to him by various unprintable titles.

Software: Reuse it or lose it

Michael Schrage

IS says it wants reusable code but doesn't reward programmers for writing it.

Creating a culture of software reuse in most development organizations often feels a bit like trying to wean people with runny noses from Kleenex to handkerchiefs. Where tissues are nice, clean and disposable, those designed-for-reuse handkerchiefs get yucky and require maintenance. Depending on where you are, handkerchiefs just aren't seen as an "elegant" solution to the problem. (The Japanese, for example, think Westerners are crazy to carry around postnasal-drip-drenched cloth.)

As metaphors go, the tissue/kerchief dichotomy captures much of the messy tension between the competing desires for disposability and reusability.

For example, even with — especially with? — the growth of object-oriented code, it's painfully clear that reuse is an inherently less elegant software design approach than what is taught and championed in most schools and organizations today. Nevertheless, organizations swear up and down that reuse is where they want and nced to go to for rapid application development.

Carried to logical conclusions, the rise of reuse means tomorrow's application devclopers will be as much software synthesists as code creators. Applications will be constructed rather than designed. Elegant efficiencies will consistently yield to demonstrable effectiveness. In practice, reuse will ultimately spell the death of elegance in traditional software design.

In the meantime, however, development organizations insist that disposable design is still more cost-effective. Design for reuse, they argue, is still too expensive. Scratch a little deeper, though, and you'll find an intriguing mismatch between what the organizations say they want and what they're actually doing. Most organizations appear to offer primitive incentives to encourage a culture of reuse. Sure, developers are asked to put stuff in and take stuff out of the repository. But for the most part, very few organizations explicitly compensate developers for not just reusing code, but for writing code that's reused. Reuse is preached, rather than rewarded. To talk about "design for reuse" divorced from "reward for reuse" represents mismanagement.

Ironically, we live in a time when Microsoft's Visual Basic has become the CASE tool of the '90s. Organizations pushing rapid application development are quick to reuse Visual Basic constructs and components in their prototyping and end-user application projects. Of course, today's traditional development community argues that isn't *real* programming. Yes, just like back in 1990, PCs weren't *real* computers. What's happening is that the rise of low-cost development tools is, in fact, serving as a de facto incentive for reuse in key parts of the organization. Reuse is going to become as much a bottom-up, end-user phenomenon as a top-down development directive from information systems.

In essence, just as end users (not IS) drove the PC onto corporate desktops, it's absolutely possible that end users (not IS) will be the driving force behind reuse. Of course, this isn't the sort of "design for reuse" that developers prefer to talk about. But this is the sort of reuse that IS is going to have to cope with, manage and facilitate if it wants to stay aligned with both technological and organizational trends.

Schrage is a research associate at the MIT Media Lab and author of *No More Teams! Mastering the Dynamics of Creative Collaboration*. His Internet address is schrage@media.mit.edu.

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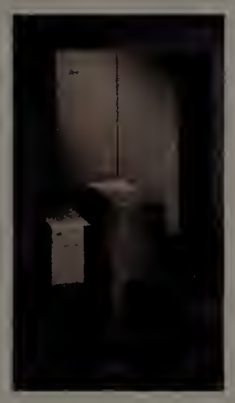

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SYMANTEC TOOL KIT GUIDES SWITCH TO WINDOWS 95, 40
WINDOWS 95 TRAINING TIPS, 41

Desktop Computing

Countdown to Windows 95

Windows 95 headaches start bit by bit

16-bit compatibility problems dog beta testers

Helpful hints

If you have trouble running 16-bit applications under Windows 95, the following tips could prove helpful:

- If the application is MS-DOS-based, run it in single MS-DOS mode as described in Windows 95 Help. Or you might be able to create a custom .PIF file for this application to run under Windows 95.
- Run the application with display settings in 640- by 480-pixel resolution with 256 colors.
- Print with spooling turned off.
- Print to a network-mapped LPT port instead of a UNC name.

Microsoft Windows 95

By Cheryl Gerber

Although most of the 16-bit corporate applications listed in a Microsoft Corp. Windows 95 compatibility testing document allegedly have no problems, beta testers have reported glitches that either aren't listed or are listed incorrectly.

For example, the recently released Microsoft "Compatibility Testing Notes" document lists Borland International, Inc.'s Paradox 5.0 for Windows as having "no problems" running under Windows 95. Paradox users said otherwise.

"It stinks," says William Lazaldi, systems analyst at Evergreen Hospital Medical Center in Kirkland, Wash., and a Windows 95 beta tester. "There are a lot of general protection faults when you try to develop Paradox 5.0 applications with Windows 95."

Borland has quietly told its Paradox users not to expect a 32-bit version until early next year. Lazaldi speculated that like many other application vendors, the company is waiting until the actual release of Windows 95 to see what it will take to turn applications into 32-bit versions. "Microsoft has a history of 'release it, then fix it,' so it's expected that Windows 95 won't work out of the gate," he says.

Other Windows 95 beta users haven't had any problems running 16-bit applications (see reviewat right).

Testing the test

The testing document, which Microsoft released earlier this month, lists more than 2,500 16-bit applications that a Microsoft group tested for compatibility with Windows 95. In general, screen savers, Windows shells and diagnostic software had some problems, as did LAN-based metering and security packages.

Meanwhile, the Microsoft document also shows "no problems" with Excel 5.0 for Windows NT, but a beta tester had a different experience. "Excel for NT would not load on the June beta of Windows 95, and Microsoft support had no explanation for it. They said it was typical of a beta," said John Thompson, systems manager at the Tennessee Valley Authority, an electric utility in Chattanooga.

Thompson said the only other compatibility problems he had experienced with Windows 95 were with

16-bit apps, *page 41*

In this special Windows 95 section:

Symantec's migration kit, page 40.

A resource box listing telephone numbers, E-mail addresses and other places to turn to for help with Windows 95, page 40.

How easy will it be to train different kinds of users? Jeffrey Gordon Angus has some suggestions, page 41.

32-bit applications are worth the wait

By Howard Millman

What do you gain, or lose, when you run your legacy applications under Microsoft Corp.'s Windows 95?

We compared the performance of 16-bit legacy applications under Windows 95 with those running under Windows 3.1 in four areas — ease of use, compatibility, performance and stability. Windows 95 deserves high marks for ease of use and compatibility, but not for its nominal improvements in performance and stability.

REVIEW

Windows 95's user interface delivers immediate benefits. It will make existing applications easier to use and new applications easier to learn. Gone are the confusing maximize/minimize/restore arrows, which have been replaced by more intelligent graphic symbols.

Also gone is the awkward system of switching among applications. In its place is a customizable task bar with icons representing active applications. DOS applications are now easier to use, thanks to simplified protected and real mode management functions and a logical grouping of property controls.

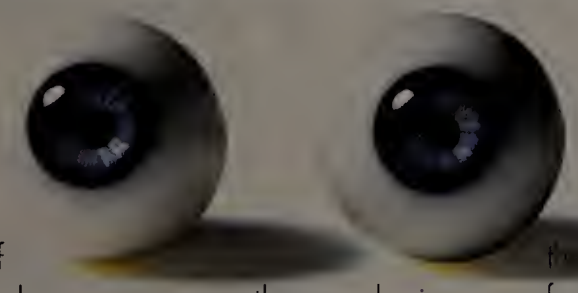
Microsoft made backward compatibility an inviolable goal, and Windows 95 achieved that goal: It ran all of our DOS and Windows 16-bit legacy applications — all current versions — without a hitch. They included Novell, Inc.'s WordPerfect 6.1; Microsoft's Word 6.0 and Excel 5.0; Inset Systems, Inc.'s HiJaak Pro; Netcom On-Line Communication Services, Inc.'s NetCruiser; America Online and DOS-based communication programs from MCI Communications Corp.; and Symantec Corp.'s Norton Commander.

Our real-world tests indicate that all of the 16-bit applications ran about as fast in Windows 95 as they did in Windows 3.1. We detected little difference in the overall performance of Word or WordPerfect.

But as an example of the improvements promised by 32-bit applications, Microsoft's forthcoming 32-bit Word 7.0 printed the same documents in about half the time that Word 6.0 and WordPerfect 6.1 required in both Windows

Windows 95, *page 40*

SHOPPING FOR A 17" MONITOR?
ENJOY THESE FABULOUS SAVINGS.



"If you stare into only one 17-inch screen this year, let it be Nokia's.," said the editors of *Home Office Computing*. And when you see what they saw, the difference is clear.

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447X – 17"	110Hz	110Hz	90Hz	80Hz	75Hz	62Hz

*PC Magazine, 1/95 **When used with an appropriate graphics card. 17" CRT yields a diagonal picture size of 15.5". Manufactured and designed in Finland in an ISO 9001 approved environment. Size of CRT measured diagonally. Actual viewing size is slightly less. © 1995 Nokia Display Products, Inc. Multigraph, Valuegraph, MicroEmission and FlatScreen are trademarks of Nokia Display Products, Inc. E-MAIL: bynokia@aol.com. Prices and specifications subject to change without notice. The Energy Star emblem does not represent EPA endorsement of any product or service. All other trademarks are the sole property of their respective companies.

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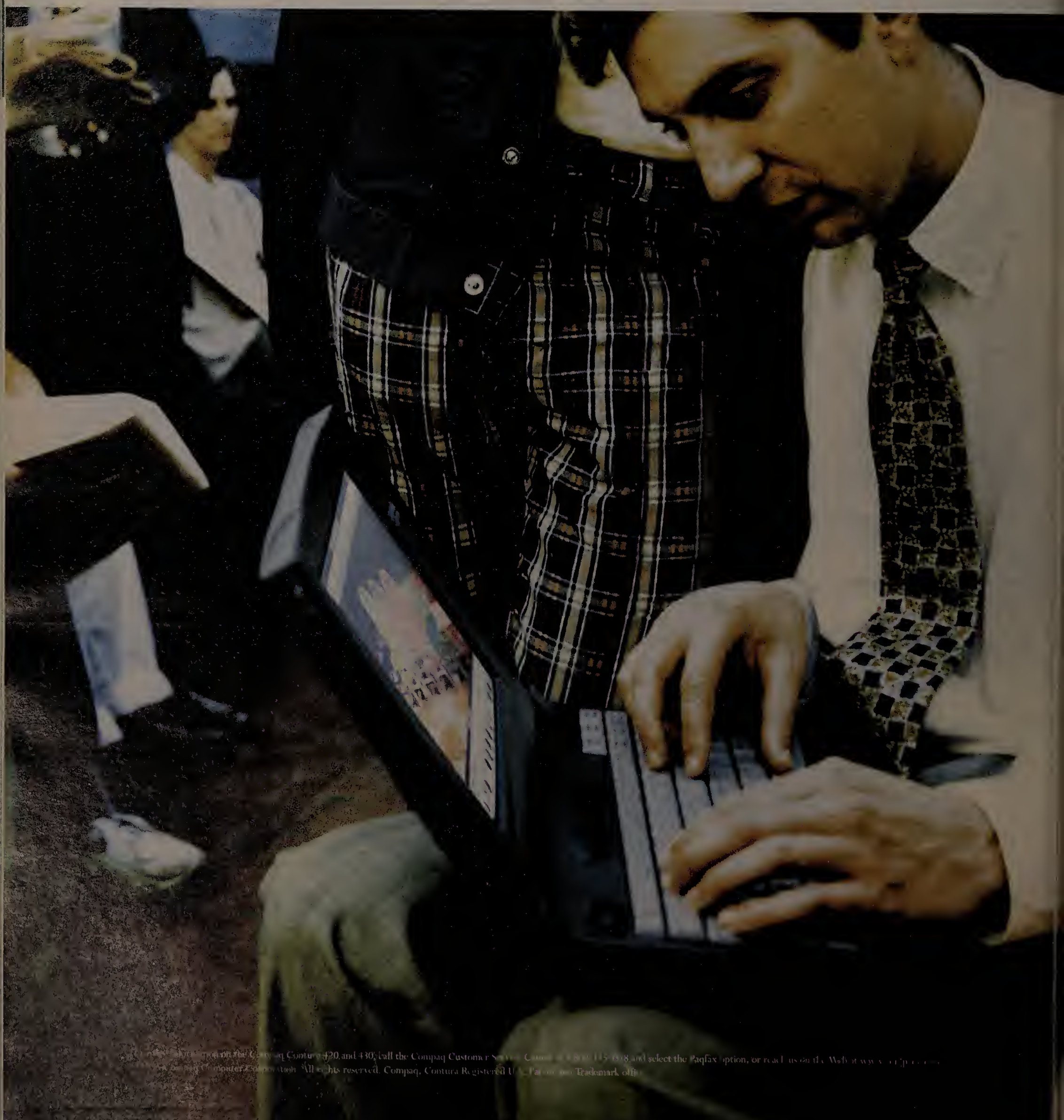
The new Compaq Contura notebooks. Powerful DX4 processors as fast as 100MHz. Up to 720MB of storage capacity. A docking base that lets you use an external monitor, mouse and keyboard. All in one remarkably affordable, elegantly efficient little package. Finally, a line of notebooks that excel in the oddest of places. Like wherever you happen to be.



For information on the Compaq Contura 420 and 430, call the Compaq Customer Service Center at 800 345-1518 and select the Faqfax option, or read us on the Web at www.compaq.com.
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Symantec tool kit guides switch to Win 95

By Stuart J. Johnston

Corporate information systems managers who need help preparing for the Windows 95 wave may find it's as close as their current reseller — provided it is an ally of Symantec Corp.

Cupertino, Calif.-based Symantec has developed a tool kit designed to help IS managers plan and budget for the transition. It combines Symantec's Norton Administrator for Networks (NAN) and Norton AntiVirus Network Manager with other tools such as the Norton Inventory Analysis Tool.

The Planning and Budgeting for Windows 95 tool kit will be available through Symantec's Enterprise Alliance Members — its corporate resellers — and not through the retail channel.

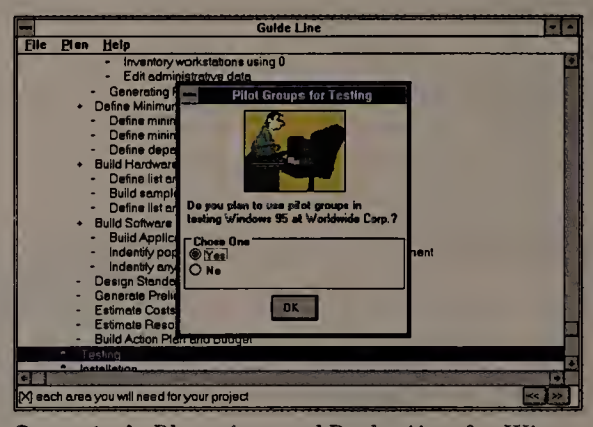
Symantec recommends a planned approach that begins with using NAN to inventory PCs on the corporate network, collecting information such as the kind of processor it has, RAM and hard disk size and how much of those resources are currently free.

This information can then be fed into the inventory analysis tool. The tool enables administrators to identify which PCs are good candidates for migration to Microsoft Corp.'s Windows 95, which need to be upgraded and which machines may need to be replaced.

Road map

The tool kit "is a very straightforward planning device. It will tell you how many of your existing PCs are capable of being migrated and what it will cost," said Larry Clary, systems engineer at reseller Coorens Communications, Inc. in Chicago.

The inventory analysis tool calculates the cost of migration and figures the return on investment, said John Norcross, director of Symantec's worldwide alternate channel program.



Symantec's *Planning and Budgeting for Windows 95 tool kit charts course for IS managers*

"As defaults, we have all of the cost of ownership data from the Gartner Group, Inc. preprogrammed into" the inventory analysis tool, Norcross said. If customers have their own figures, they can change the defaults so the calculations more closely match their own situations, he added.

Corporations "can put in their own parameters and their own cost structure for memory, service and support costs, and then it spits out the financial reports," said Bill Holder, director of operations at MicroPath, Inc., an asset management consultancy in Bellevue, Wash. "If we custom-did that, it would cost a fortune. This is going to save us and our clients time."

Data from the tools can also be output into popular project management tools to create schedules and performance charts. As part of the preparation process, Symantec recommends that administrators run the network antivirus tool to make certain the PCs are free of viruses. They also recommend using other administration tools such as disk defragmenters to prepare the PC hard drives for Windows 95 installation.

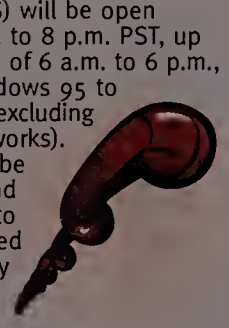
Except for a few very large customers, Symantec will offer the tool kit only through resellers, partly because the resellers have the experience and expertise to help customers with the required planning and analysis, the company said. Pricing will be left up to resellers because budgeting and planning is a consulting process and not simply a set of tools for sale, Norcross said.

Also, resellers price their services differently — some charge by the day, others by bid and still others by a set schedule.

Windows 95 resources

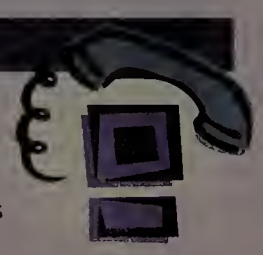
Telephone

Beginning on Aug. 24, Microsoft's Product Support Services (PSS) will be open weekdays from 5 a.m. to 8 p.m. PST, up from the current hours of 6 a.m. to 6 p.m., for purchasers of Windows 95 to get technical support (excluding calls dealing with networks). Additionally, PSS will be open on weekends and holidays from 7 a.m. to 3 p.m. PST. The extended hours, however, are only temporary and will continue for "a couple of months," said Windows 95 product manager Yusuf Mehdi. You can call PSS at (206) 635-7000.



Microsoft fast tips: Answers to frequently asked questions from the Windows 95 Preview Program, updated weekly, are available seven days a week, 24 hours a day. Call (800) 936-4200.

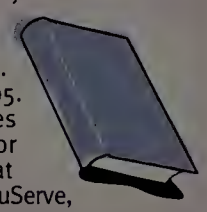
On-line



- World Wide Web (Mosaic) site is **http://www.microsoft.com.**
- Internet FTP site is **ftp.microsoft.com/peropsys/win_news.**
- CompuServe: Type **'GO Winnews.'**
- Prodigy: Type **'JUMP WINNEWS.'**
- America Online: Use keywords **'WINNEWS.'**
- Genie: Download files from the WinNews area under the Windows RTC.
- Microsoft WINNEWS: To subscribe, send E-mail to: **enews@microsoft.nwnet.com.** As the text in your message, write: Subscribe WINNEWS.
- The Windows 95 book (on-line version) is on Ventana's Web server. It includes Windows 95 reviews and hyperlinks to Web sites. The Web address is **http://kells.vmedia.com/cat/index.html.**

Books

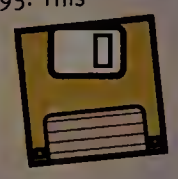
- *The Windows 95 Resource Kit.* Intended for IS staffers and help desk professionals, this 1,300-page book contains guidelines for rolling out Windows 95 in corporate America. Sections include a planning guide, installation, networking, systems management and communications. Three disks are included; they contain an on-line version of the book as well as tools, utilities and templates. Suggested price: $49.95. Available at bookstores and computer stores or from Microsoft Press at 80-MSPRESS. On CompuServe, type **GO MSP.**



- *The Windows 95 Book.* Intended for end users, this book explains the new folder-based file system, how to design a custom desktop and use new applications including WinPad. Suggested retail price: $39.95. Available at bookstores or contact Ventana Communications at (800) 877-7955. Ventana's Web server is at **http://kells.vmedia.com/cat/index.html.**
- *Voodoo Windows 95.* Provides shortcuts; includes a companion CD-ROM that has software, sample files and utilities. Suggested price: $24.95. Available at bookstores or contact Ventana Communications at (800) 877-7955. Ventana's Web page is **http://kells.vmedia.com/cat/index.html.**
- *The Microsoft Network Tour Guide.* Has tips, shortcuts and anecdotes about accessing The Microsoft Network. Suggested price: $24.95. Available at bookstores or contact Ventana Communications at (800) 877-7955. Ventana's Web address is **http://kells.vmedia.com/cat/index.html.**

On disk

Windows 95 Knowledge-Pak. A disk geared for help desk personnel, the Knowledge-Pak has answers to 1,000 questions about Windows 95. This so-called knowledge base covers installing and configuring Windows 95 and devices as well as other tips. It includes problems, solutions, bugs and workarounds as well as full-color photos of screen dumps. The disk also embeds into other vendors' help desk software. Price: $500 per help desk seat. To order a free demo disk, contact ServiceWare, Inc. at (800) 572-5748; E-mail at **info@serviceware.com.**



Windows 95

CONTINUED FROM PAGE 37

95 and Windows 3.1. Word 7.0 delivered a noticeable increase in performance.

We welcomed the increased printing speed. Windows 95's 32-bit, pre-emptive multitasking architecture returns control quickly, while it spools the print task in the background.

Another welcome enhancement, provided by the 32-bit user interface subsystem, enabled us to continue working in a word processing document while other operations ran in the background. We wrote this review in a DOS-based word processor, while the Windows 95 version of Microsoft Office installed itself from a CD-ROM in the background.

When we burdened the system further, however, strange things happened.

Simultaneously, we formatted a floppy disk in DOS, loaded Office from a CD-ROM, printed a graphics-laden WordPerfect document and composed a document in the DOS-based word processor. Text and graphics in the printouts got scrambled, and the Office load ended prematurely with an error message. Windows 95's "local reboot" function enabled us to selectively close the misbehaving applications one at a time, thereby avoiding the need to reboot the entire machine.

We then discovered a problem with a CD-ROM driver. It appears that legacy hardware incompatibility will prove a frustrating and common scenario and force many users to find updated drivers.

Aside from performance and stability, other improvements were welcomed, such as 256-character file names. Users, however, will have to wait until applications that support long file names become more prevalent. Current 16-bit programs running in Windows 95 can only read, write and display eight-character-plus-three file names.

Windows 95 has achieved *backward compatibility*

Millman is a freelance writer and reviewer in Croton, N.Y.

A Special Advertising Supplement

Introduction by
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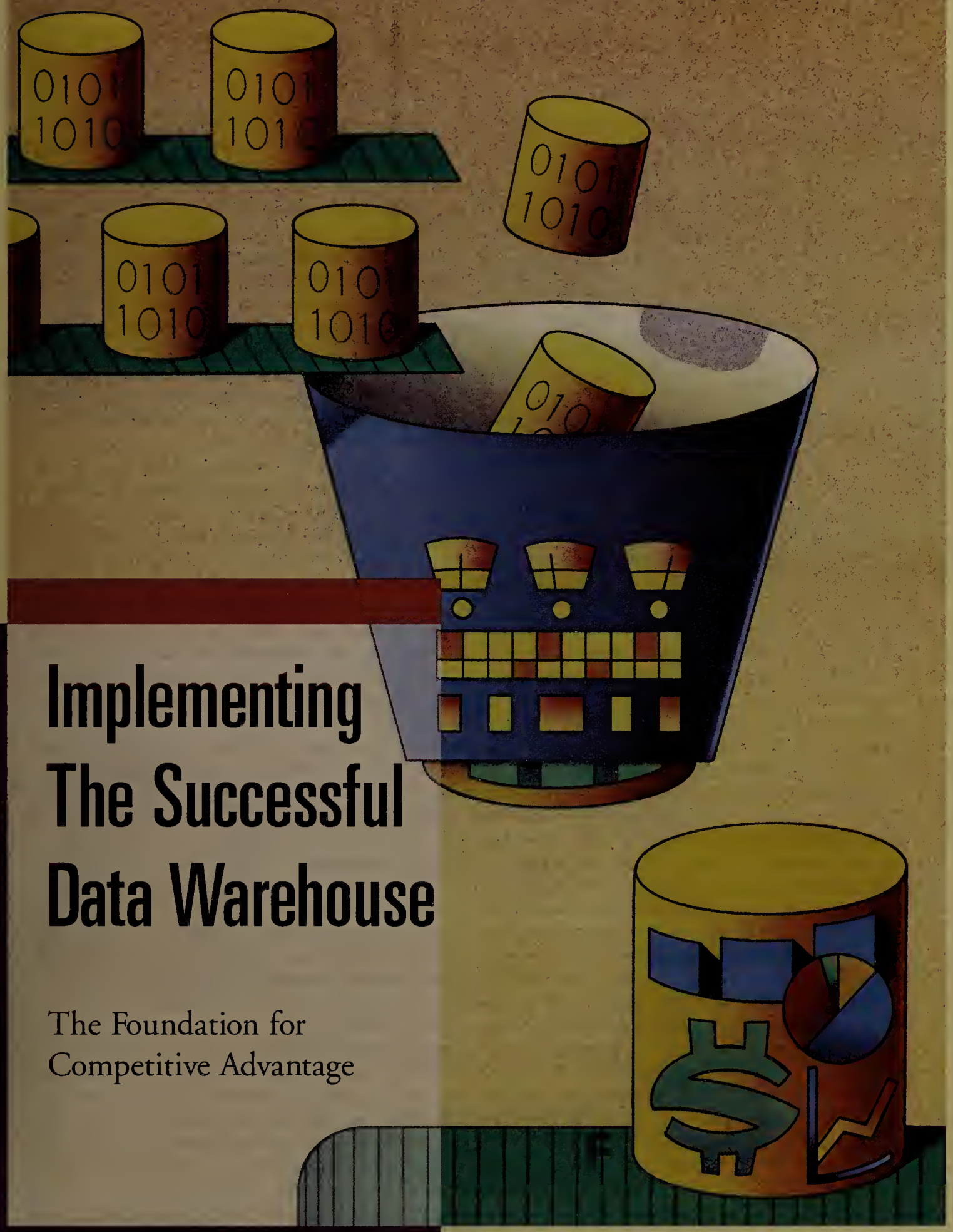


Implementing The Successful Data Warehouse

The Foundation for Competitive Advantage

Transforming Data into Information

Data warehouses allow better decision-making

By Robert Moran
Senior Analyst, The Aberdeen Group, Inc.

A few hundred reengineered enterprises have already changed the playing rules for everyone. These leading-edge enterprises have built the new technology known as the data warehouse, which enables them to understand their customers' buying patterns and preferences, as well as the underlying characteristics of the business itself. An increasing number of organizations are using a data warehouse as a fulcrum to leverage their current information architectures.

Data warehousing wrestles with the problem of moving various forms of data from legacy and OLTP systems. It requires preparing, conditioning and staging data so business users armed with powerful desktop tools can perform analyses that previously were either impossible, or too expensive and time-consuming.

These on-line collections of data are generally built on an RDBMS, and housed and maintained separate from the enterprise's transaction-processing operational systems. Depending on the scope of their efforts, enterprises using data warehouses will be able to:

- Increase profits;
- Improve knowledge-worker productivity;
- Make sounder decisions;
- Harness unpredictable, subject-oriented information;
- Distribute decision-making;
- Spare the operational databases from ad hoc queries and the resulting performance degradation; and
- Clean up the legacy, while moving the corporate systems architecture forward.

Time and again, data warehouse users point to these benefits. But they also note that using a warehouse is an iterative, ongoing process. Prepare for flux and change, they say. Success generally creates a series of interrelated increases: in the number of users, in demand for faster access to information, in the size of the RDBMS behind the warehouse, and in the complexity of the interacting components.

For these reasons, Aberdeen believes that, to be successful, data warehouse planners should embrace two intrinsic benefits of parallel-scalable computing: its abilities to efficiently *scale up* incrementally by adding more processors as demand for warehouse data grows and to smoothly *speed up* responses to the increasing number and complexity that accompany that growth.

A system supporting more than, say, 50 users and 50Gb of data cries out for the intrinsic benefits of scalable parallel technology. But above this size, the many interrelated data warehouse "technical details" overwhelm less sophisticated technologies, resulting in poor bang for the buck.

While a warehouse derives its information from other enterprise information stores, it reflexively changes the architectures that feed it. To evolve toward an information (as opposed to data) architecture, enterprises must anticipate increases in transaction- and batch-processing loads as well as overall administration.

Enterprises that use parallel-scalable systems for warehouses typically look for the following:

- *Scalability*, the ability to incrementally add processors and disk drives as system demand grows;
- *High availability*, including on-line backup and recovery, component redundancy and failover;
- *Parallel-scalable RDBMSs*, supporting very large databases and the underlying parallelization of queries and query traffic; and
- *Systems and network management*, including performance monitoring, tape and storage management tools, robust DBMS tools and network configuration utilities.

IS planners looking to build data warehouses, and to leverage their value for the entire enterprise, would do well to seek out hardware and software suppliers that can function as partners offering complete hardware and software systems and service. Aberdeen believes that the combination of supplier expertise and the use of good data-processing planning and practices will enable enterprises of all sizes to harness their IS architectures to capture greater customer delight and meet the conditions of the 1990s and beyond.

Robert Moran is senior analyst with The Aberdeen Group, Inc., a computer and communications research firm and consultancy in Boston.

Six Keys to a Successful Data Warehouse

A well-built warehouse can be vital to a company's bottom line

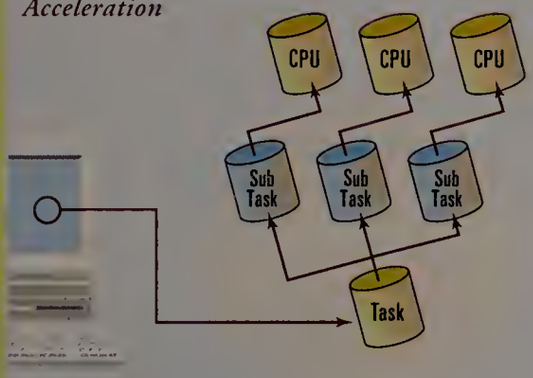
Corporate data is like a vein of ore buried deep inside a mountain. If not easily accessible by a company's decision makers, it remains untapped. Inside a corporation with no data warehouse, only 10% of the knowledge workers can actually create their own ad hoc queries.

But a corporation with a data warehouse can consolidate its historical data into one relational database with a user-friendly front end. Information can be manipulated and analyzed from a business perspective.

Such analysis can have a healthy impact on the bottom line. After a hotel chain realized that a 65% occupancy was break even, it used a data warehouse to analyze historical occupancy rates. The chain learned which hotels were not meeting the 65% rate and ran promotions to attract guests to those hotels. In 12 months, a simple query resulted in significant profit.

But such results are possible only if a data warehouse is properly architected. This hinges on six elements:

Parallel Speedup



INFORMIX-OnLine Dynamic Server, based on Dynamic Scalable Architecture, provides a significant speedup in processing performance over serial systems. It divides end-user requests into subtasks to leverage multiprocessor hardware architecture.

1 **DATA MODELING** is the analytical process of selecting pertinent data from the operational databases, deciding which data to include in a warehouse, and determining how the warehouse will be architected. This data integration consists of tasks such as standardizing the data encoding and naming conventions, and consolidating, transforming and cleaning the data to be delivered to the warehouse.

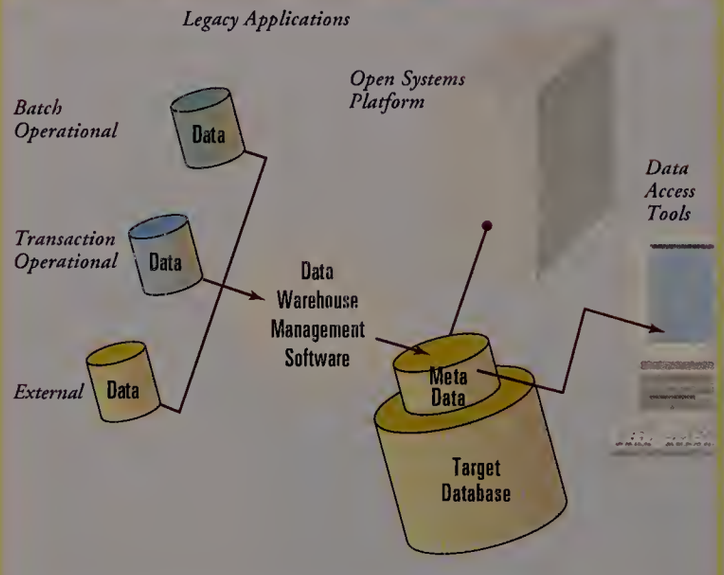
In terms of architecture, a company must decide if it wants one comprehensive, centralized warehouse or several smaller ones aimed at specific users. The latter concept, called a data mart, has two advantages: it allows a smaller hardware investment and puts information closer to the hands using it. But it cannot provide the enterprisewide business analysis or economies of scale of a central warehouse.

2 The challenge in automating **WAREHOUSE MANAGEMENT** is choosing tools that will perform mapping, extracting and transforming of data; code generation; creation and management of meta data (information about data, such as where it originated); and maintenance of the warehouse. Such functions are supplied by software vendors that specialize in automating the warehouse management process. For example, RDBMS supplier Informix Software and Hewlett-Packard have adopted a best-of-class approach to partnering with these vendors. No one vendor has the expertise to handle the complexity of a data warehouse solution. It is critical at this stage to choose vendors who emphasize partnering as part of their warehouse strategy.

3 The heart of a data warehouse is a **SCALABLE RDBMS** that includes a parallel processing architecture to provide the performance and availability needed for queries, data loading, data indexing, backups and restores. A system can more rapidly execute a complex query, for example, by decomposing it into smaller subcomponents and processing them in parallel. The application of parallelism to fundamental RDBMS operations has been the means for successfully implementing large data warehouses.

Although some database vendors have designed parallel processing capabilities on top of their database servers, Informix Software's Dynamic Scalable Architecture is the only RDBMS architecture designed with core internal parallelism. With this core architecture, INFORMIX-OnLine Dynamic Server can handle

Data Warehouse Architecture



A data warehouse environment integrates data from a variety of source databases into one target database that is optimally designed for decision support.

extensive data queries, index scans, loading, indexing, updates, inserts, deletes, backup and recovery in parallel.

Intelligent data partitioning, which allows tables to be distributed across multiple disks, becomes increasingly critical as a data warehouse grows. INFORMIX-OnLine Dynamic Server provides for intelligent data partitioning to further improve parallel I/O operations and VLDB management. The larger the database, the more important that a system administrator perform database administration tasks, such as archive and restore, bulk load and unload, at the partition level vs. database level. Also, as a warehouse is refreshed with new data from the operational systems, an administrator may take a specific database partition offline, while leaving the remaining partitions available for use.

4 **A SCALABLE, OPEN ARCHITECTURE** is needed to support data warehousing. Openness is critical, since most warehouses interface with a variety of platforms. Scalable means that the platform should scale down as easily as it scales up. For instance, HP offers the HP 9000 Model T500 for data warehouses that stretch into gigabytes. But many corporations will want to supplement the main warehouse with data marts. HP's Intelligent Warehouse software, coupled with HP's wide range of scalable systems, allows all the components of a data warehouse to interoperate as a whole, whether they are centrally located or in distributed locations.

5 Developers and end users need easy access to a data warehouse. Developers need to create client/server decision support applications; users need to use those applications and create ad hoc queries. In selecting **DATA ACCESS TOOLS,** ease of use is crucial.

OLAP, also referred to as multidimensional analysis, has emerged as a powerful and intuitive approach to select, analyze and present historical data from a business perspective. It enables users to view data in a multidimensional format and provides them with more flexibility than traditional analysis tools.

Besides providing query tools, reporting tools and OLAP capabilities via partnering with best-of-class data access tool providers, Informix and HP also provide tools of their own.

The INFORMIX-NewEra programming environment is designed for developing scalable enterprisewide database applications. INFORMIX-NewEra ViewPoint provides GUI-based information access for non-technical business analysts who need decision support information from the warehouse. HP's Intelligent Warehouse simplifies how users view the information from the data warehouse via a framework based on a collection of software, middleware and administrative tools. The contents of the warehouse are presented in terms of a business model, rather than tables, resulting in an easy-to-use, centralized enterprise information access environment.

6 **CONSULTING SERVICES** are important in building a successful data warehouse. A data warehouse spans a range of technologies; the level of complexity involved in building a warehouse should not be underestimated. Users should budget for training on new products and hands-on services.

Because a data warehouse is a long-term solution, users should look for consultants with considerable experience. Informix has strong relationships with several large systems integrators, including HP, and all Big Six consulting firms. HP has been building data warehouses for nine years. The company has developed its consulting techniques through first-hand knowledge in implementing and managing its own enterprise 600Gb data warehouse.

Data Mart Helps Motorola Coordinate Manufacturing Process

When one of Motorola's business units needed to get a grip on its manufacturing schedules, it turned to both Informix Software and Hewlett-Packard to implement a data mart.

Motorola's Semiconductor Product Sector (SPS) unit oversees the design, manufacture and marketing of semiconductors for cellular phones and other products. But because SPS had no decision support system of its own for capturing and manipulating historical manufacturing data, which was supplied from the corporate data center, it was having difficulty making accurate production plans. Specifically, there was no coordination between orders, material purchasing and plant capacity.

"Each marketing person was working independently," says John Shoemaker, senior software engineer for the Phoenix-based unit. Rather than working with a centralized information store, each person, in essence, had their own personal data warehouse. This meant that when it came to orders, inventories and capacities, there were a lot of inaccuracies, a lot of redundant data and a lot of administrative headaches.

To eliminate all that redundancy, SPS decided to create a series of integrated data marts. Once it made that decision, the first thing Shoemaker's unit did was to acquire an HP 9000/T500, then installed INFORMIX-OnLine Dynamic Server as the database server. The basic criteria for both these choices was the same: reliability.

"The HP system just doesn't crash, and it's doing the big work," says Shoemaker. "We get data downloads [from the corporate mainframe] and we do a lot of rebuilding of tables. The system has to be able to build those indexes in parallel with multithreading. The data is available in an instant."

"High availability [of the data] was a requirement from step one. Informix and HP deliver that for us."

John Shoemaker, senior software engineer, Motorola

Informix won out over other database vendors because its parallel core makes it as powerful as the HP hardware on which it resides. "We needed to do parallel index builds. High availability [of the data] was a requirement from step one," says Shoemaker. "Informix and HP deliver that for us. It also does parallel backups."

SPS still uses Motorola's corporate mainframe to obtain the data it needs on materials and capacities. But now, once SPS has that data, "we can instantly summarize it, process it, and generate a report," says Shoemaker. In fact, the data mart automatically spews out hundreds of reports, covering most of the information that the company's users need. And if they want more detail, they now have the ability to conduct further queries themselves.

Another plus is the degree of automation Motorola was able to build into the system. Data is available 24 hours a day. With INFORMIX-4GL programs written to monitor the loading and compiling process, the system essentially runs itself. If an event fails to happen as programmed, it can self-correct or contact the IS department.

Moreover, by writing a forecasting system using INFORMIX-4GL, SPS was able to accomplish its ultimate goal of managing production schedules. It is now in the process of migrating the forecasting system to object-oriented INFORMIX-NewEra.

And because the system can scale down as easily as it scales up, SPS is now considering installing regional data marts at its offshore sites. According to Shoemaker, this would allow Motorola to cut some of the costs associated with "the bandwidth required to support remote users."

MOTOROLA

Data Warehousing: Don't Try It Without Informix and Hewlett-Packard.

If you're thinking about building data warehouses—whether gigabytes or terabytes in size—you're not alone. Hundreds of organizations are designing and deploying data warehouses for competitive advantage through advanced decision making. And many of them—like Transamerica Commercial Finance, The Home Depot, and DHL Worldwide Express—are making the move with the leaders in data warehousing, Informix and HP.

Why? Because Informix and HP have joined forces to provide best-in-class, client/server-based data warehousing solutions. Together they create a unique combination of superior technology, data warehousing expertise, and strategic partnerships, that offer you:

- An open environment to build powerful, customized data warehouses.
- Advanced Solutions Centers for you to model and test data warehousing and parallel processing solutions.
- Joint consulting and systems integration services.

HP and Informix technologies are a perfect fit for data warehouse applications. That's why Carole P. Hershman, vice president and chief information officer of Transamerica Commercial Finance Corporation, says,

"The HP and Informix data warehousing solution is the best choice, due to Informix's Dynamic Scalable Architecture and HP's strong customer focus and high-performance servers."

Informix and HP: The Data Warehouse Advantage

Informix	HP
UNIX Leaders	UNIX Leaders
Very Large Database Support	Broadest Line of Compatible, Scalable Open Systems
Dynamic Systems Administration/Management	Industrial-Strength Operating System
Dynamic Scalable Architecture, Including:	High Performance, Availability, and Reliability
Parallel Data Query	Mainframe-Caliber Enterprise Servers
Parallel Loading/Indexing	Intuitive Data Warehouse Management
Parallel Sorts and Joins	Open Warehouse Consulting Methodologies
Parallel Inserts/Deletes/Updates	Years of Data Warehousing Experience
Parallel Backup and Recovery	
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Windows 95 easy? Says who?

Lots to learn, but Windows 3.x users have it best

By Jeffrey Gordon Angus

When vendors tell you a product is easy to use, it usually is — for somebody. Products are designed with an individual or group in mind, and as long as the intended user isn't Moe, Larry or Curly, users can usually figure out how to use it.

So it is with Microsoft Corp.'s Windows 95. Users with different backgrounds will go through very different learning experiences. I worked with individuals with three kinds of prior experience to evaluate their successes and failures with the new environment.

One well-used educational theory divides trainees by "learning channel": There are those who learn best by seeing, those who learn best by doing and those who learn best by listening.

Windows 95, for several reasons, will be easiest to learn for those who absorb information by fooling around.

The first reason is that many ways of doing things aren't documented in any of the most likely places. Therefore, most people won't find (or remember once they find) some of the tips and tricks that make Windows 95 a quick, productive environment. Second, some things, such as riding a bike, are learned outside of logic, and Windows 95's right-clicking and drag-and-drop innovations are best learned by doing.

People who learn by seeing, normally very well served by manuals and on-line documentation, will fare reasonably well. However, they may not do as well as they did with previous operating systems. There is an explosion of paper and on-line training materials with the product, including an on-line guided tour, a task-oriented step-by-step help function with push buttons to execute key processes and a well-organized introduction booklet.

The missing ingredient is coordination among these elements. The materials are very good at the most elementary facts and the higher-level concepts but are occasionally shaky on simple facts. For example, the manual defines the concept of a "shortcut" and explains exactly how to make one. However, it provides a thin explanation of how to set up a desktop to make the concept valuable.

> Don't accept wholesale the promise that Windows 95 is *the* interface for initiating new users. For less experienced users, it's no easier than any other interface.

People who learn by hearing — the third of the population chronically shorted in the proliferation of computing — are stiffed again. There's nothing intrinsic that will ease their learning of the job or your training of them.

What do you know?

Different backgrounds create different expectations and problem-solving pathways for individuals. How easy users find Windows 95 may be largely based on their prior computing experience. Windows 3.x users will get up to speed on the environment more quickly than Macintosh practitioners and the folks who have never been in a graphical user interface (GUI). They will generally face more, but not insurmountable, challenges.

Windows 3.x users have already been working in drag-and-drop environments, and the nonintuitive keystrokes they have memorized, including Alt Tab and Alt F4, will still work. The new environment is more customizable, and that can lead to confusion. However, Microsoft has done a good job approximating the most effective Windows 3.x utilities, including Hewlett-Packard Co.'s Dashboard and Symantec Corp.'s Norton Desktop. The infrastructure is there for people to make the move, with the Task Bar replacing Task Manager and the melding of File Manager and Program Manager functions.

Marketing and wishful thinking on the part of standards-minded information systems folks have boosted the promise of Windows 95 as the reason to switch Macintosh users to Windows. Experienced Macintosh users can make the move, but there's still going to be a major usability challenge in the two-button mouse and right-clicking.

The Macintosh user's sense of how to navigate among programs will help. (An application can be hidden by clicking outside its window on the Macintosh desktop.) The same applies to what Macintosh users can expect with windows that are moved and then closed. (On a Macintosh, they re-appear where you last had them; in Windows 95, they appear in their default size/location.)

Something to appreciate

In the beta versions of Windows 95, the operating system doesn't always know which application is associated with a document; Macintosh users take that ability for granted. However, Macintosh users appreciate the Task Bar, and some will come to appreciate the multiple ways Windows 95 can accomplish the same action.

Don't accept wholesale the promise that Windows 95 is *the* interface for initiating new users. For less experienced users, especially those who have never worked with a GUI, it's no easier than any other interface. The myriad things to figure out — including icons, buttons, single-clicking, right-clicking and double-clicking — overwhelm most new users. The vast improvements Microsoft made to this product are primarily for intermediate and power users.

Angus is a freelance writer and consultant at The Data Works in Seattle.

The training game

- The most alien concept for almost all users is clicking with the right mouse button to bring up a menu of specific actions that can be taken with that object.
- For Windows 3.x users, take advantage of the useful, if not coordinated, manual and on-line sections aimed specifically at those folks, such as "If You've Used Windows Before...."
- For users with no prior graphical user interface experience, start them with the on-line Windows Tour.
- Warn ALL users that the eight-character-plus-three file-naming convention isn't dead until they use exclusively Windows 95-specific versions of programs. In Windows 95, if you use a Windows 3.x application and save a file, it will mash any long name you've assigned and possibly confuse it with another file. If long file names are the key reason you're converting, hold off switching production users until you have the set of Windows 95 applications they will be using.
- Ask everyone to give you every tip and trick they've discovered and develop cheat sheets for all new users. Start with the Tips "read me" file in the main Windows '95 directory.

16-bit apps

CONTINUED FROM PAGE 37

in-house customized applications. In these cases, it was an application problem rather than an operating system problem. "We've had no problem with third-party 16-bit desktop applications," he said.

In another case, a DOS application that isn't on the Microsoft list can't run at all in Windows 95.

According to Anthony Schutzler, LAN support supervisor at United Parcel Service, Inc., a networked database program called Advantage XBase by Extended Systems, Inc. in Boise, Idaho, can't run unless it is in DOS mode. "For some reason, Windows 95 is fighting with Advantage," Schutzler said.

UPS has had other problems with Windows 95 compatibility. "Windows 95 and Windows for Workgroups are compatible until we add Novell NetWare 3.0 and use it to get around. Then there are problems," Schutzler said. "Windows 95 doesn't seem to run consistently well in a Novell environment."

However, Lazaldi hasn't had any trouble running Windows 95 in Novell, Inc.'s NetWare 4.1 environment. He suggested that the degree of LAN incompatibilities could depend on implementation.

Whatever the implementation, Microsoft said it has gone the extra mile to fix bugs from even the most obscure applications — and that it has no plans to resolve any remaining incompatibilities.

"You won't see the remaining issues get solved in future releases of Windows 95," said Yusuf Mehdi, product manager at Microsoft's Personal Systems Division. "The stuff that's remaining is getting into the far reaches of the most quirky apps that just don't run anyway."

Some third-party vendors said they agree with this approach. "The remaining incompatibilities of Windows 95 are generally the fault of the application vendor," says Grant Wickes, vice president of product management at Micrografx, Inc. in Richardson, Texas.

Different versions, different problems

Microsoft's testing laboratory has determined that different versions of the same 16-bit application can run into different glitches under Windows 95. In Intel's LANDesk 1.51, for example, the compatibility testing document said, "Microsoft Client for NetWare Networks doesn't support NetWare-supplied VLM components required for this program. General Protection Faults occur with WSWIGHT." With LANDesk 2.0, "the Meterwin feature may cause Windows to stop responding," among other problems.

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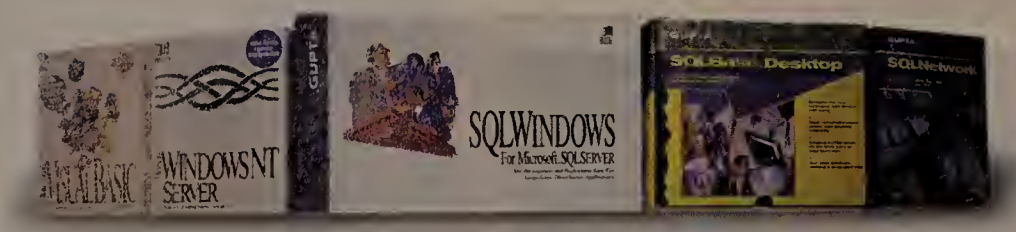

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L.A. LAW FIRM GIVES IMAGING ITS DAY IN COURT, 44
VENDORS UNITE FOR UNIX STANDARD, 46

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UltraSPARC picks up the pace

Sun's 64-bit workstations bid to close performance gap with rivals

By Jean S. Bozman

Sun's workstations are due for a power boost — and not a moment too soon.

For three years, users of Sun Microsystems, Inc. workstations have watched as their machines lagged in performance behind units from Hewlett-Packard Co., Digital Equipment Corp. and others (see chart below). Still, Sun workstation sales grew more than 20% last year due to an extensive inventory of SunOS and Solaris applications and an installed base of more than 1 million machines worldwide.

But all the waiting has exacted a price at some compute-intensive sites, which have assigned Sun workstations to support roles.

Closer Look
Sun workstations

One longtime Sun user has pretty much relegated his SPARC-based machines to the lower end of the lineup and said he is looking for a big power boost from the next generation of Sun chips. "It's going to have to be something that's significantly faster, both in file I/O and in compute speed," said David Pensak, a senior research fellow and principal consultant for advanced computing technology at Du Pont Co. in Wilmington, Del.

In recent years, Pensak's group has bypassed some of the older Sun systems as number-crunching servers in favor of Silicon Graphics, Inc. and IBM RS/6000 units, he said. Some of the group's Sun SPARCstation 10 workstations are being used as high-volume Network File System servers, Pensak said. Still, approximately 100 Sun workstations are being used for scientific research at the site, largely because of their ability to run a wide variety of applications.

"I think that the chip set is a known weakness of the Sun environment," said Tsvi Gal, a senior vice president of information technology at the Bank of America in Concord, Calif. "In the race between chip providers — Digital's Alpha, HP's PA-RISC and IBM's PowerPC — and with the Intel P6 coming, Sun needs to have an answer, and quickly."

Sun's new family of workstations, due later this year, will be wrapped around the 64-bit UltraSPARC chip to close the performance gap between Sun and its rivals (see box).

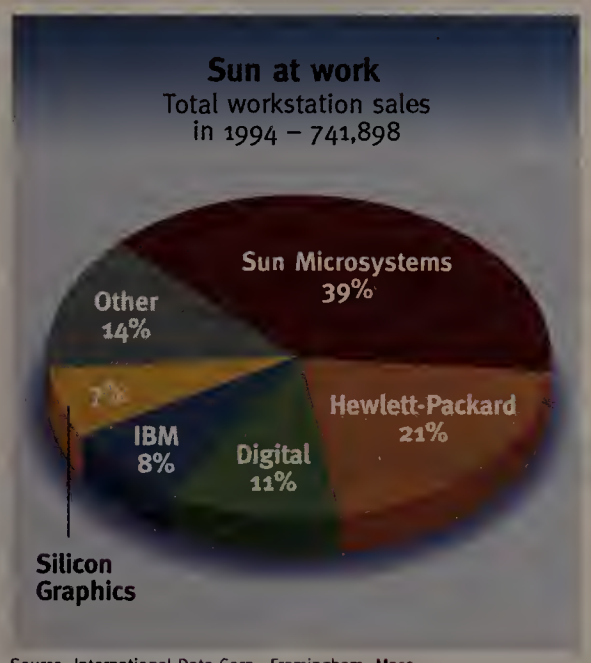
Analysts noted that the SuperSPARC 60 chip used in the SPARCstation 20 workstation — Sun's most powerful to date — is roughly equivalent in power to the Intel Corp. Pentium chip. To compensate, Sun boosted clock speed to 75 MHz and used multiple processors. But the workstation — and the chip it is based on — needs a boost for Sun to maintain its dominant market share, they said.

Noncommercial need

This quest for more speed is driven mainly by Sun's technical users. At commercial sites, workstations don't need to do number crunching as much as host multiple windows that contain applications running on corporate Unix servers. Accordingly, Sun is selling more workstations to commercial sites as client/server machines — including large shipments of SPARCstation 5 and SPARCstation 20 units introduced last year.

More Sun server users are deploying Windows PC desktops instead of Unix workstation clients, allowing corporate end users to access companywide electronic-mail and Windows-based word processing documents. Such users say the Windows machines work well in client/server applications that use a relational database on a Sun server.

One such user is Amoco Petroleum Canada Ltd. in Calgary, Alberta. It has about 500 Windows PCs acting as clients to four Sun SPARCcenter 2000E servers. The company also has 100 Sun workstations for its exploration and science applications, users there said.



Source: International Data Corp., Framingham, Mass.

Roaming eyes

Sun would appear to have no trouble holding on to its technical base, with 39% of all workstation sales last year. But many users are growing restless after holding on to their older SunOS machines for the sake of keeping custom applications, said Andrew Feit, director of workstation research at Dataquest, Inc. in San Jose, Calif.

Indeed, he said, there has been some erosion in Sun units at longtime Sun workstation sites, particularly technical sites.

"UltraSPARC will almost certainly help the company," Feit said. "People who are being forced to move away from Sun because the processors were too slow will no longer feel compelled to do so."

A change in the lineup

	SPECint92	SPECfp92
1995 RISC chip performance in Unix workstations*		
Sun's 60-MHz SuperSPARC	76.9	98.1
IBM's 80-MHz PowerPC 601	88.1	98.7
SGI's 200-MHz MIPS R4400SC	140.7	142.7
HP's 125-MHz PA-RISC 7150	149.4	201.3
Digital's 275-MHz 21064A	200.1	291.1
Projected 1996 RISC chip performance in Unix workstations		
IBM's 133-MHz PowerPC 620	225	300
Sun's 167-MHz UltraSPARC	275	305
SGI's 200-MHz MIPS R10,000	300+	600+
Digital's 300-MHz 21164	330	500
HP's 200-MHz PA-RISC 8000	375	500

*As of December 1994

Source: "Microprocessor Report," Sebastopol, Calif.

When I'm 64

Sun's next generation of Unix workstations will be based on 64-bit UltraSPARC RISC chips and wrapped around an entirely new system architecture, Bob Pearson, director of workstation marketing at Sun Microsystems Computer Corp., said at Siggraph '95.

Pearson provided a bare-bones profile of the UltraSPARC workstations, which Sun expects to introduce this fall. With at least 2½ times the speed of SuperSPARC uniprocessors, UltraSPARCs will also have much faster I/O "to handle information flow within the machine," Pearson said.

Among the top features, he said, are the following:

- An internal "crossbar" switch that turns on high-speed connections among the workstation's multiple processors. This setup is similar to that used in the backplane of other vendors' parallel processing machines. The crossbar will replace the Mbus database to allow faster data flow inside the machine.
- A 3D RAM memory subsystem, jointly developed with Mitsubishi Corp., that works with the UltraSPARC's onboard graphics subsystem. It will speed processing of video and image data.
- Visual Instruction Set (VIS), an extended version of the SPARC instruction set. VIS will process multiple streams of video and graphics data, including Motion Picture Esperts Group decompression, at up to 1.2 billion instructions per second.
- UltraSPARC's 64-bit addressing, which will allow users to view very large databases. The 64-bit scheme will support large data sets in direct system memory, eliminating the need to read queried data from many disk drives. Pearson said UltraSPARC systems have circuits that allow data to be broken into eight separate eight-bit data streams for parallel processing. — *Jean S. Bozman*

Vendors join NT parade by porting Unix apps

By Steve Moore

DAVE MARSHALL

Unix developers have started to port key applications to Microsoft Corp.'s Windows NT operating system, afraid they may otherwise end up in the shadow of an NT client/server steamroller.

Unison Software Corp. in Santa Clara, Calif., for example, recently announced an NT version of its popular Maestro job scheduling software. The new release requires users to schedule NT system workloads from Unix machines running Maestro. Within a year, Unison plans to offer yet another version of Maestro that will allow users to schedule jobs from Windows NT-based machines, independent of Unix.

Ironically, analysts said the porting of Unix applications to NT spells trouble for Unix in the client/server arena (see box). While Unix is not in imminent danger, the porting of Unix applications to NT "should be an early warning" to the industry, said Frank Dzubeck, president of Communications Network Architects, Inc. in Washington. "NT did the same thing to Novell's [installed] base — it came in as an applications server," he said.

For example, NT's compliance with Posix, a portable, Unix-based standard operating system interface, could well enable it, "by avoiding some of the idiosyncratic pitfalls of Unix, to absorb so much Posix [application] development that it will become the de facto open systems operating system," said Tom Nolle, president of CIMI Corp., a Voorhees, N.J., consultancy.

Users applauded Unison's move to support NT job scheduling. "We have a mixed network of Unix and NT servers and would like to schedule jobs on both platforms," said Peter French, a technical manager at the Prudential Assurance Co. in London. That would provide desirable consistency from an administrative point of view and eliminate the need to "worry about different tools on different platforms," he added.

Windows NT vs. Unix

- Job schedulers and other Unix applications are being ported to Windows NT. Activities such as cross-scheduling jobs on Unix and Windows NT systems will likely drive the Windows NT market.
- Windows NT's Posix compliance breaks key Unix-derived APIs away from Unix.
- Unix growth depends on its success in the client/server market, where it faces stiff competition from Windows NT.
- Bickering among Unix vendors has splintered the Unix market, while a single vendor, Microsoft, controls the Windows NT market.
- Unix's lack of user friendliness puts it at a disadvantage as falling computer prices shift purchasing to less technical client/server buyers.

Next in line

Another indication of NT's strength in the client/server world is that Tivoli Systems, Inc.'s Tivoli Management Environment (TME), a systems and applications management framework, "will be made available on NT in September," said Robert Finn, a product marketing manager at the Austin, Texas, firm.

Tivoli has partnered with several third-party job scheduling tool vendors to make their products — including Unison's Maestro and AutoSys from AutoSystems Corp. in Boulder, Colo. — work with TME.

"If the [central processing unit] is busy on a system you want to run [a job] on, [AutoSys] will send it to other CPUs. And if you could do that with NT as part of that sort of cluster, that would definitely be an advantage," said Ken Socko, a systems engineer at Computer Intelligence, Inc. in Raleigh, N.C., and a TME and AutoSys user.

But another user took a different view. While NT today appears to be a "reasonably stable and robust pre-emptive multitasking operating system, which is what you want for production applications, I don't see many people developing back-end applications for NT" because "they don't trust it as much as Unix," said Greg Walker, a technical specialist at the Liberty Mutual Insurance Group in Toronto.

Briefs

Ross sends SPARC upgrades

Ross Technology, Inc. in Austin, Texas, said last week it is shipping 125-MHz upgrade kits for **Sun Microsystems, Inc.** systems based on the SuperSPARC RISC chip. The upgrades, which use Ross' HyperSPARC chip sets, are priced from $6,158 for a single-processor kit to $23,549 for a four-processor kit.

Federal document management

Network Imaging Corp. (NIC) has teamed with **Unisys Corp.**'s Federal Systems Division to develop custom document management and workflow applications based on NIC's 1View software for government agencies. Specific applications include automating purchasing procedures, insurance claims processing and tax records management.

Motorola to resell Solaris

Motorola, Inc.'s Computer Group in Tempe, Ariz., said last week it will resell **SunSoft, Inc.**'s Solaris Unix operating system on its PowerPC-based embedded systems single-board computers. Motorola plans to begin sales this fall.

Legal ease

Using Visual Basic and C++, developers created these legal-specific features for Henniger, Mercer & Bennet's imaging system:

- The ability to erase part of an image when submitting documents to court during a case. For example, the system could replace certain names meant to be kept anonymous with the word "confidential."
- The ability to create subsets of internal document numbering schemes on each document provided to opposing counsel. For example, when certain documents are released, the system provides a separate number scheme to make them run in sequence.

L.A. law firm gives imaging its day in court

System adds full text search and retrieval

By Tim Ouellette

While Orange County, Calif., is swimming in red ink from its recent bankruptcy, the law firm trying to help the county is swimming in paper.

At Henniger, Mercer & Bennet, documents are pouring in related to Orange County's finances and the rest of the Los Angeles firm's cases. Having worked with imaging systems before, the firm's director of technology knew what was the best direction to take.

"You can't properly manage these document-intensive cases without imaging," said Matt Ghourdjian. The faster lawyers can research their material, the faster they can prepare for their cases and get to court, he added.

Mass scan

The firm has installed an imaging system using Watermark Software, Inc.'s Enterprise Edition — which runs on Microsoft Corp.'s Windows NT — to scan paper documents. It also uses Fulcrum Technologies, Inc.'s full-text search retrieval software to access the data.

So far, more than 3.5 million documents — including financial reports and related case histories — have been scanned into the system, Ghourdjian said. The highest volume to date is 30,000 new documents a day. At night, 40 office PCs act as optical character recognition (OCR) systems to speed up the process even further.

Burlington, Mass.-based Watermark, which was recently purchased by FileNet Corp., released its Enterprise Edition imaging software in April to move from just desktop imaging to production capabilities. Some in the industry wondered if the Microsoft standards-oriented software could handle enterprise imaging, but Ghourdjian said he felt otherwise.

"We were so impressed that we decided it was the foundation to base our imaging system on," he said. Both the imaging server and clients run Windows NT.

Tracking it down

But once the documents are stored, lawyers need a fast way to search the information. With the help of integrator Icon Consulting, Inc. in Boston, Henniger, Mercer & Bennet added Ottawa-based Fulcrum's search engine to the imaging system.

SearchServer indexes the scanned documents and lets users perform both database-type searches and searches of the OCR-generated files. Specific applications related to the firm's requirements were developed for the software using Microsoft's Visual Basic (see chart above).

"We put the whole thing together in 60 days," said Ellery Dyer, vice president of sales at Icon, though Fulcrum's Windows-based software has some trouble running under Windows NT.

Only seven people are on the system now, Ghourdjian said, but it will be rolled out to all 60-plus lawyers in the firm, other law firms cooperating on a case or even large clients.

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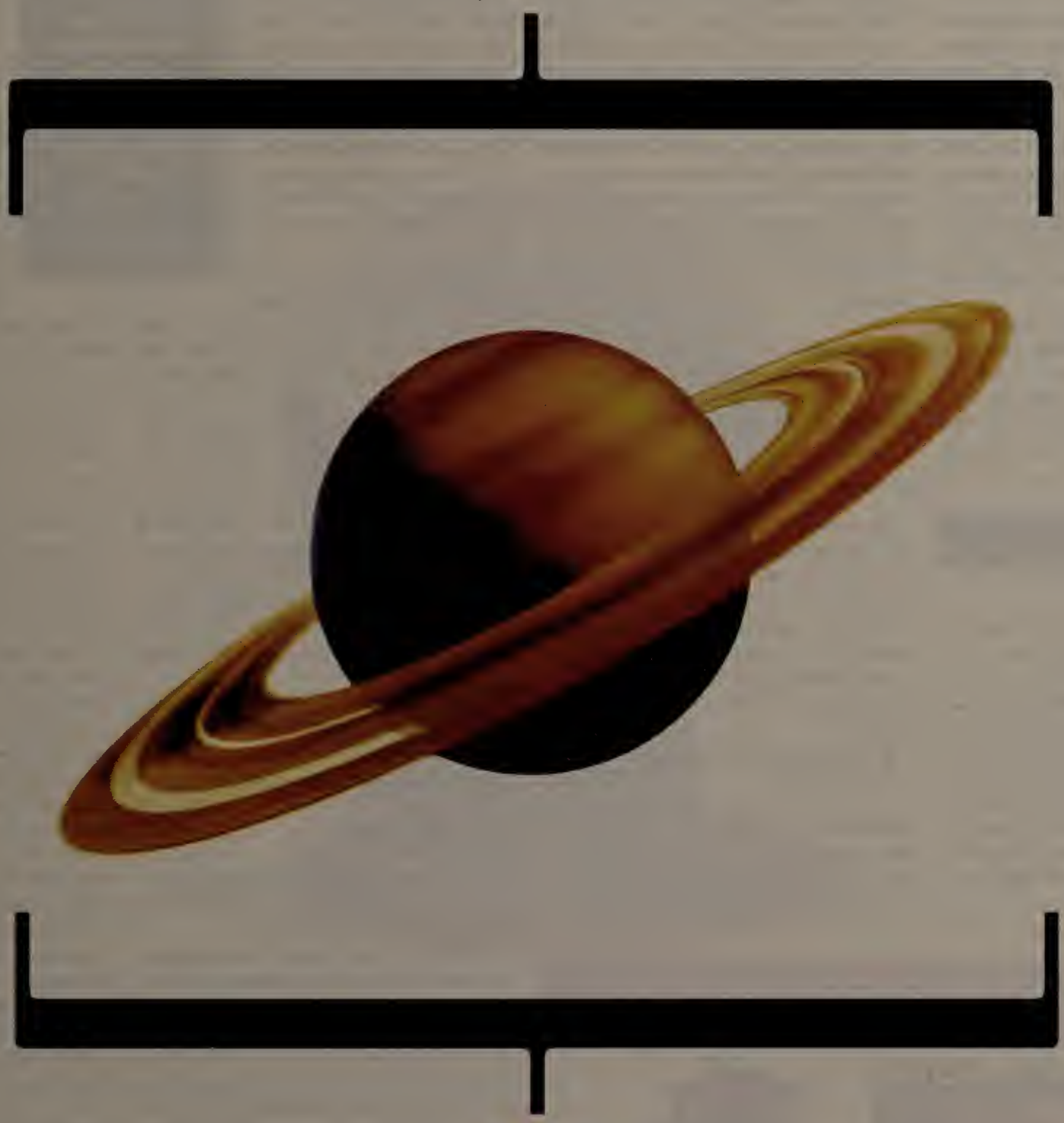

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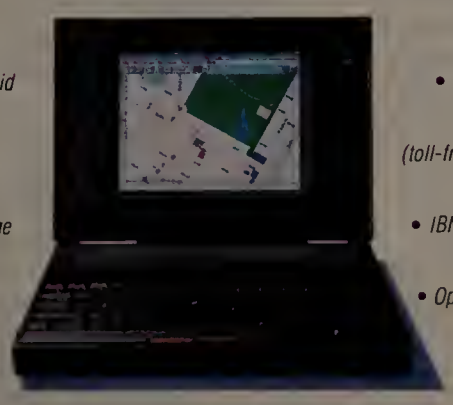

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Vendors band together for 64-bit Unix standard

Industry leaders head global development group

By Sara Mason
BOSTON

A group of computer companies from around the globe has agreed to develop industry standards for 64-bit Unix specifications.

Intel Corp., Hewlett-Packard Co., IBM and Digital Equipment Corp. are among the companies planning to develop a widely accepted set of application programming interfaces (API) and a common 64-bit C programming model for data representation.

The industry-standard API set will be intended for a range of uses, including supercomputers, enterprise servers, workgroup servers, workstations and network systems. A proposal of the specifications is expected to be available by the end of the year, officials said.

The 64-bit Unix API specification is expected to comply with current standards, such as X/Open Co.'s XPG 4.2, Posix, the System V Interface Definition, the Open Software Foundation's Common Desktop Environment and X Window System. Leading industry APIs, system utilities and network computing interfaces will be included to ensure robustness so that applications have access to necessary services. The 64-bit Unix APIs will also be compatible with 32-bit applications, according to the companies.

New flavor

An industry standard would make it easier for software developers to write applications for Unix. For now, developers must customize applications for many versions of 32-bit architectures on Unix.

HP Chief Executive Officer Lew Platt said Unix would gain a boost from having a unified applications base because there have been so many "flavors" of 32-bit Unix operating systems, each with its own variation. "The steps that we took with this initiative, this bringing together of all the key industry players, I think, guarantees an even brighter future for Unix."

> "It's kind of a remarkable achievement, getting that group all together. It took a little bit of work."
> — Lew Platt, CEO, Hewlett-Packard

Getting all the Unix RISC vendors to agree to it was not easy, Platt said. "It's kind of a remarkable achievement, getting that group all together. It took a little bit of work," he said.

Industry standards would lead to the development of more software for Unix systems. "That's really where the big benefit to customers will come from," a Digital spokesman said.

Digital already offers products based on a 64-bit Unix architecture.

"We know our approach works," the spokesman said. "But we are prepared to change if industry standards require it."

Other companies participating in the worldwide effort include Groupe Bull, Hitachi Ltd., Mitsubishi Electric Co., Motorola, Inc., NEC Corp., Ing. C. Olivetti & Co. and Siemens/Nixdorf Informationssysteme AG.

Mason writes for the Boston bureau of the IDG News Service. Senior editor Jean S. Bozman contributed to this report.

New Products

Repository Technologies, Inc. has introduced CustomerFirst Notes Remote, a relational database product.

According to the Woodridge, Ill., company, CustomerFirst Notes Remote is a version of its SQL-based help desk support system that links with Notes to connect remote users and support centers. CustomerFirst Notes Remote keeps a central database of incidents and solutions that is made available to remote users.

The product lets field consultants enter new incidents from the field. It also lets remote international support centers and distributors actively support customers and departments without leased lines or copies of centralized customer-support software.

Pricing for Notes Remote begins at $5,000.

▶ *Repository Technologies*
(708) 515-0780

Video Conferencing Communications, Inc. has introduced TeleView Office, a low-cost videoconferencing system.

According to the Aliso Viejo, Calif., company, TeleView Office is a PC-based videoconferencing system designed for use over standard analog telephone lines. TeleView Offiee provides 10-15 frames per second with a V.34 28.8K bit/sec. mode operating on a 486-based or faster PC.

TeleView Office costs $599 which includes camera, capture board and software.

▶ *Video Conferencing Communications*
(714) 452-0800

Micro Computer Systems, Inc. has introduced Inetix Client and Inetix Gateway, connectivity software.

According to the Irving, Texas, company, Inetix Client and Gateway enable Windows-based Novell, Inc. NetWare IPX/SPX client computers to access the Internet and the World Wide Web without changing protocols. Inetix Client and Inetix Gateway work together to offer NetWare IPX/SPX users transparent Internet access: Client runs under Windows as client software on a NetWare IPX/SPX system; and Gateway runs as server software on a Microsoft Corp. Windows NT system.

Inetix Client has a built-in firewall because IPX/SPX networks do not use IP addresses. It also includes node and IP address filtering features.

The Inetix product line is available in four different user configurations.

Pricing for Inetix Client and Inetix Gateway starts at $995.

▶ *Micro Computer Systems*
(214) 659-1514

Meridian Data, Inc. has introduced CD Net 1.0 for Microsoft Corp.'s Windows NT, client/server software for CD-ROM access.

According to the Scotts Valley, Calif., company, CD Net 1.0 for Windows NT is multiuser software that gives users simultaneous CD-ROM access across heterogeneous networks. It eliminates the restriction of one CD per drive letter and lets network administrators establish enterprisewide standards for sharing CD resources in Windows NT Server and Windows NT client environments.

The product lets users access up to 56 CDs through a single drive letter or group several CDs to different drive letters. Its networking architecture lets users see each disc as a simple subdirectory under a common file structure. Administrative tools include disc access security and usage metering.

CD Net 1.0 supports networks including Microsoft's LAN Manager, TCP/IP, IBM's LAN Server and OS/2 Warp Connect and Novell, Inc.'s NetWare IPX/SPX. It is compatible with Windows NT Workstation and Windows NT Server.

CD Net 1.0 for Windows NT costs $1,995 for an unlimited-user server license.

▶ *Meridian Data*
(408) 438-3100

Novell, Inc. has announced that the GroupWise 4.1 electronic messaging system is now available for several character versions of Unix.

According to the Orem, Utah, company, GroupWise 4.1 is an enterprisewide, cross-platform, electronic messaging system that integrates electronic mail, personal calendaring, group scheduling, voice mail, faxes, Internet messages, task management and information access. It is available for both Unix character and graphical systems.

The new Unix character versions of GroupWise are the following: System V, Release 4 for Novell's UnixWare and AT&T Global Information Solutions systems; Sun Microsystems, Inc.'s SunOS 4.1.3 and Solaris; Hewlett-Packard Co.'s HP-UX; IBM's AIX; Data General Corp.'s DG-UX; and The Santa Cruz Operation's SCO Unix.

A five-user client/administration package costs $695.

▶ *Novell*
(801) 429-7000

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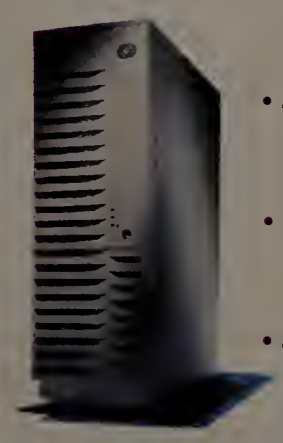

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BANKS HIT INFO HIGHWAY AT DIFFERENT SPEEDS, 52
EUROPE TO BENEFIT FROM TELEPHONE DERegulation, 54

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BBN gets wise

BBN/StatsWise software package boosts network performance, uses analysis to reduce costs

By Bob Wallace

Users who want to keep an eye on the performance of their wide-area internetworks can turn to a new tool from Bolt Beranek and Newman, Inc. (BBN).

BBN in Cambridge, Mass., last week introduced BBN/StatsWise, a software package that collects, stores and analyzes network data. The package enables users to boost network performance and reduce ongoing eosts by performing trend analysis, solving configuration problems and conducting capacity planning.

Analysts predict BBN/StatsWise will be well received by users.

"The product gives network managers a high-level view of the network's general health and is adept in identifying trends in [network] usage," said Sylvia Clark, a senior analyst at Aberdeen Group, Inc. in Boston. "That helps [users] plan for the future, which is a tall task."

One beta tester, who has used the tool for several months, agreed. "The product is very useful for network design," said Jane Wojick, network manager at MIT in Cambridge, Mass. Wojick said she hasn't seen anything else that "could generate a daily ASCII report that shows me performance based on basic parameters."

Wojick uses BBN/StatsWise with a Fiber Distributed Data Interface backbone network with four routers and roughly 500 to 600 nodes, most of which are high-performance workstations.

Network management

The package can provide information gathered by its own Simple Network Management Protocol-based poller, which is designed to quickly and efficiently collect statistics from network devices.

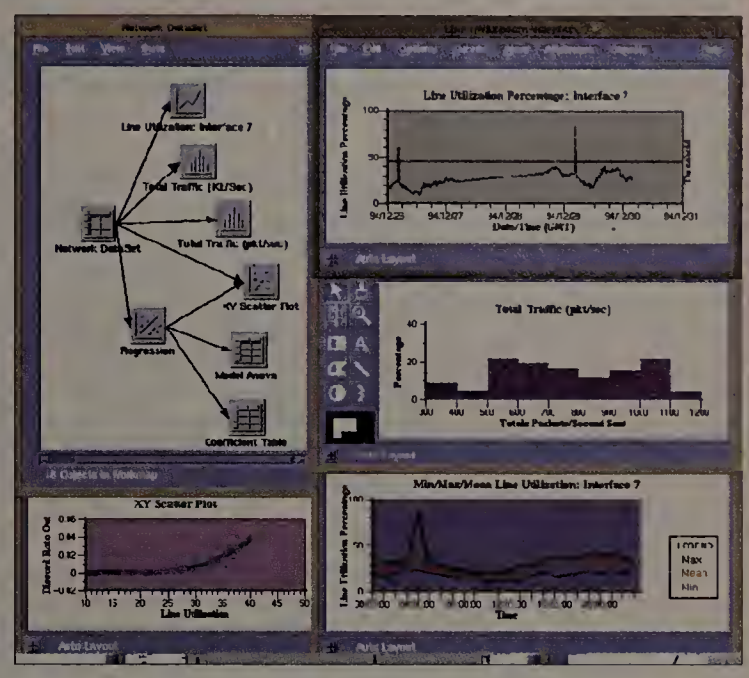
Other systems accessible

BBN/StatsWise can also use data gathered from various systems, including Sun Microsystems, Inc.'s SunNet Manager, Hewlett-Packard Co.'s OpenView and Cabletron Systems, Inc.'s Spectrum.

All network statistics are then stored in the program's database.

Users looking to make strategic decisions, including new equipment purchases, can use the product to compare data from multiple sources and explore relationships that can help make those decisions.

The package also lets network managers save data over a period of time to facilitate long-term analysis and network planning. That usually results in network reconfiguration as users find ways to cut costs.



BBN/StatsWise *collects, stores and analyzes network data*

While such historical data is helpful, analysts stressed that BBN should offer a package that uses real-time data. This would give users a lower-level view of their networks to find out what is behind a performance dip.

BBN "needs to either offer a separate tool that will let users spot the devices that cause problems or build that capability into [BBN/StatsWise]," Clark said. "It wasn't designed to do that, but that's what users are moving toward."

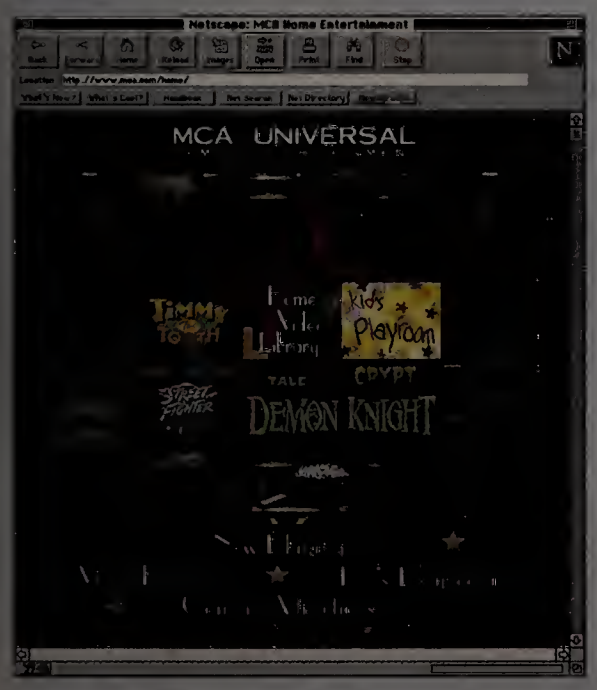
Using BBN/StatsWise software, end users can graph their information with one of several preset graphs or design their own.

"We like the options, though so far we've gone with the default reports, which we like," Wojick said.

Because all the data on the graphs is dynamically linked, changes in any one point are automatically reflected in every view.

BBN/StatsWise has built-in graphical tools that enable network managers to create presentation-quality reports, making it easier to share the results of graphs and reports with others.

BBN is already shipping the package, with prices starting at $17,000.



As the movie *The Net* hangs ten in theaters everywhere, at least one moviemaker plans to bring its movies to the real thing.

MCA/Universal Home Video, Inc. has a new World Wide Web site, "The Ultimate Hollywood Screening Room." Users can preview videos or view pay-per-view movies. The Web site also has a library devoted to the company's home video offerings. These movies are now playing at http://www.mca.com.

Navigating New York traffic

Transportation dept. gets help from Vines

By Laura DiDio

They don't call it the Big Apple for nothing. New York has 6,500 miles of streets and bridges, and at the core of all this asphalt management is a Banyan Systems, Inc. Vines network.

The New York City Department of Transportation (DOT) chose Vines when it installed its first client/server network, DOTNet, five years ago. DOTNet replaced an outmoded terminal/host setup, and the agency now relies heavily on the network to monitor all transportation-related activities throughout the city's five boroughs.

The DOT's responsibilities include planning and monitoring traffic flow, maintaining the streets, bridges and tunnels, issuing summonses, towing illegally parked vehicles and overseeing all street construction projects. The DOT makes sure all the traffic lights, street signs and parking meters work. It plants trees. It even makes sure the Staten Island Ferry is running.

Teresa Stahling, the DOT's assistant commissioner of MIS operations, said the network has to transmit and process information on a variety of events in various databases citywide. The city's size — the DOT itself has 98 offices — means, for instance, that it has one database entirely devoted to special thematic maps for pothole tracking.

The DOT's Teresa Stahling *says the department may move to Windows 95*

"To say that it's a mammoth task would be an understatement," Stahling said. "Our networks are not only used for the DOT's internal communications, but we also have external links to mainframe-based systems and databases in other city agencies."

Among these are the Parking Violations Bureau, the offices of Personnel, Procurement and City Planning and the Department of Information Technology and Communications.

All together now

The network currently connects some 1,700 clients attached to 33 Banyan Vines 5.4 Servers citywide. These are linked via an industry standard TCP/IP and Vines IP backbone. Rounding out the DOT's network setup are dozens of Cisco Systems, Inc. AGS, CGS and IGS routers, which are used in conjunction with SynOptics Communications, Inc. — now Bay Networks, Inc. — LattisNet hubs.

Stahling said the DOT chose Vines in 1990 because it was the only network operating system that offered an enterprise directory service with its StreetTalk.

New York, *page 54*

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Banks hit info highway at different speeds

Rivals at odds regarding Internet security, acceptance

By Kim S. Nash and Thomas Hoffman

Bank of America and Wells Fargo Bank, two large banks that cater to customers in Silicon Valley, hold very different views of the Internet as a channel for consumer banking.

While Wells Fargo has moved aggressively to encourage customers to go on-line, Bank of America hasn't rushed headlong into the Internet realm.

On-line banking

Security holes and uncertainty about whether such a venture would yield measurable payback have kept Bank of America on "a sane path," said Larry Nepomuceno, vice president of electronic delivery services at Bank of America's Concord, Calif., offices.

The bank has turned most of its attention to the distribution of its electronic personal finance package, Meca Software, Inc.'s Managing Your Money. Customers use the software on their PCs and can download account information once they have dialed in to Bank of America systems. The bank co-purchased the software from Fairfield, Conn.-based Meca in May. NationsBank joined Bank of America in the deal.

Mere blocks from Bank of America's headquarters in San Francisco's financial district, Wells Fargo views the Internet differently.

Bank of America *offers limited Internet access to banking information*

In fact, Wells Fargo expects to provide full-function banking through all the channels it offers, including the World Wide Web, Prodigy, telephone and automatic teller machines (ATM), next year.

The approaches toward on-line business the two banks have taken so far "are as different as night and day," said Richard Crone, an analyst at KPMG Peat Marwick, a consultancy in Los Angeles.

With Meca, Bank of America has opted for a more proprietary method; Wells Fargo plans to embrace the public Internet fully and more quickly, Crone explained.

Wells Fargo dismisses the notion that on-line security is flimsy.

"I don't know why people say security is not there," said Dudley Nigg, executive vice president of direct distribution at Wells Fargo. "We've simply invested time in understanding security and proceeded from there."

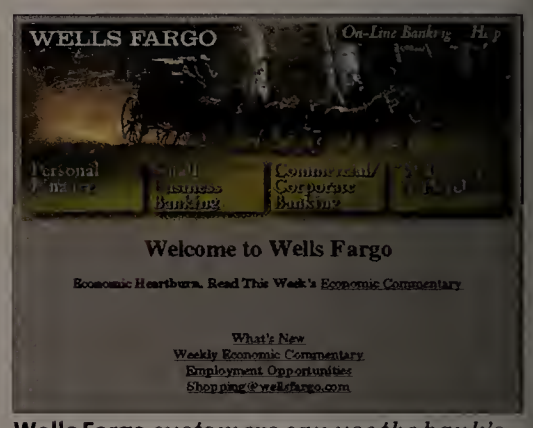
Some customers look forward to conducting their banking business on-line, citing long lines at branches and ATMs in unsafe neighborhoods.

Lisa Lipman, an independent television producer in San Francisco, said she already does most of her banking with Wells Fargo over the phone. "If I could do it at home at the PC, I'd like that even more," she said. "I don't have [an] awful [lot of] trust in people, so electronic access would suit me."

Wells Fargo customers use technology for banking more than the average U.S. consumer, Nigg said. For example, 40% of Wells Fargo customers regularly use ATMs; the national average, calculated by consulting firm McKinsey & Co., is just 15%, Nigg said.

Home sweet home page

After completing a careful security check via phone, customers can access Wells Fargo's home page and look at current balances on their checking, savings, money market and 23 other types of accounts. Users can also drill down on those figures to see the preceding 45 days' worth of transactions.



Wells Fargo *customers can use the bank's home page to check on their accounts*

Wells Fargo hasn't yet allowed customers to move money over the Internet. It wants at least 100-bit encryption, compared with the 40-bit encryption in place now. The bank plans to test such improved security methods by the end of the year, Nigg said.

Meanwhile, before Bank of America will let Internet users conduct business, it must first figure out how to pass those transactions through its firewall to its system of records, Nepomuceno said.

"That's going to be a trick," he said. "Security is our biggest issue." The bank runs two Internet nodes that are Digital Equipment Corp. Alpha 3000 servers with the OSF/1 operating system.

Bank of America plans to give some customers read-only access to consumer loan and other information in September, and it may offer some secured Internet banking transactions in October, according to Nepomuceno.

Mobile management made easy

Task force to address users' concerns, needs

By Mindy Blodgett

Shepherding a mobile staff means information systems managers must grapple with unruly sheep: portable users who expect on-demand access to LANs and need fast and easy dial-up network access, among other challenges.

IS managers may now find relief from the Mobile Management Task Force, which announced its formation last week at the TCP/IP Expo in San Jose, Calif.

The industry group, spearheaded by Epilog Technology Corp. in Albuquerque, N.M., and Xircom, Inc. in Thousand Oaks, Calif., will promote management standards to address the concerns of network administrators managing mobile computers.

Its focus will be on devising a mobile Management Information Base (MIB) that will serve as an extension to the Simple Network Management Protocol. A MIB is a standard or specification to which companies write software or other applications.

Victor E. Mutnick, a corporate vice president at New York Life Insurance Co. in New York, said he supports anything that makes it easier to remotely diagnose computer problems and manage mobile users.

"It could bring prices down and make adding equipment easier; I'm all for that," Mutnick said.

All fixed up

Problems addressed by mobile management standards and a mobile Management Information Base extension to SNMP include the following:

- The ability to determine the vital statistics of each laptop, including the manufacturer and operating system
- Events monitoring, such as the last time a PCMCIA card had been removed from the machine
- Power management status of portable computers
- Information on location of users

While working on the MIB proposal, backers of the task force said it became clear that mobile and wireless users had special concerns that should be addressed separately.

"We started getting feedback from users and vendors about problems that are common for mobile users," said Russ Sharer, director of corporate access products at Xircom. "We all carry laptops, and we know the frustrations."

Addressing mobile users' needs

Once a mobile MIB has been adopted, the group will focus on creating a Wireless Network Management MIB, according to task force members. The group will examine the needs of mobile users and propose solutions. It also plans to function as an adviser to the Internet Engineering Task Force and the Desktop Management Task Force, which are also working on standards.

The task force will also serve as a lobbying forum for mobile users' needs. It will have users on its roster.

Other charter members of the task force include Compaq Computer Corp.; Fujitsu Microelectronics, Inc.; IBM; LanAire; Motorola, Inc.; National Semiconductor Corp.; and Zenith Data Systems.

Briefs

Sprint settles

The **U.S. Department of Justice** has approved **Sprint Corp.**'s telecommunications venture with Deutsche Telekom and France Telecom. The Kansas City, Mo.-based carrier signed a consent decree that prevents Sprint and the joint venture from receiving preferential treatment until the European telecommunications markets open up. Sprint now needs approval from the Federal Communications Commission.

Deal made

IntelliCom Solutions, Inc. in Exton, Pa., has entered a distribution agreement with **ISDN Systems Corp.** under which IntelliCom will add ISDN Systems' products to its Integrated Services Digital Network and frame-relay applications offerings.

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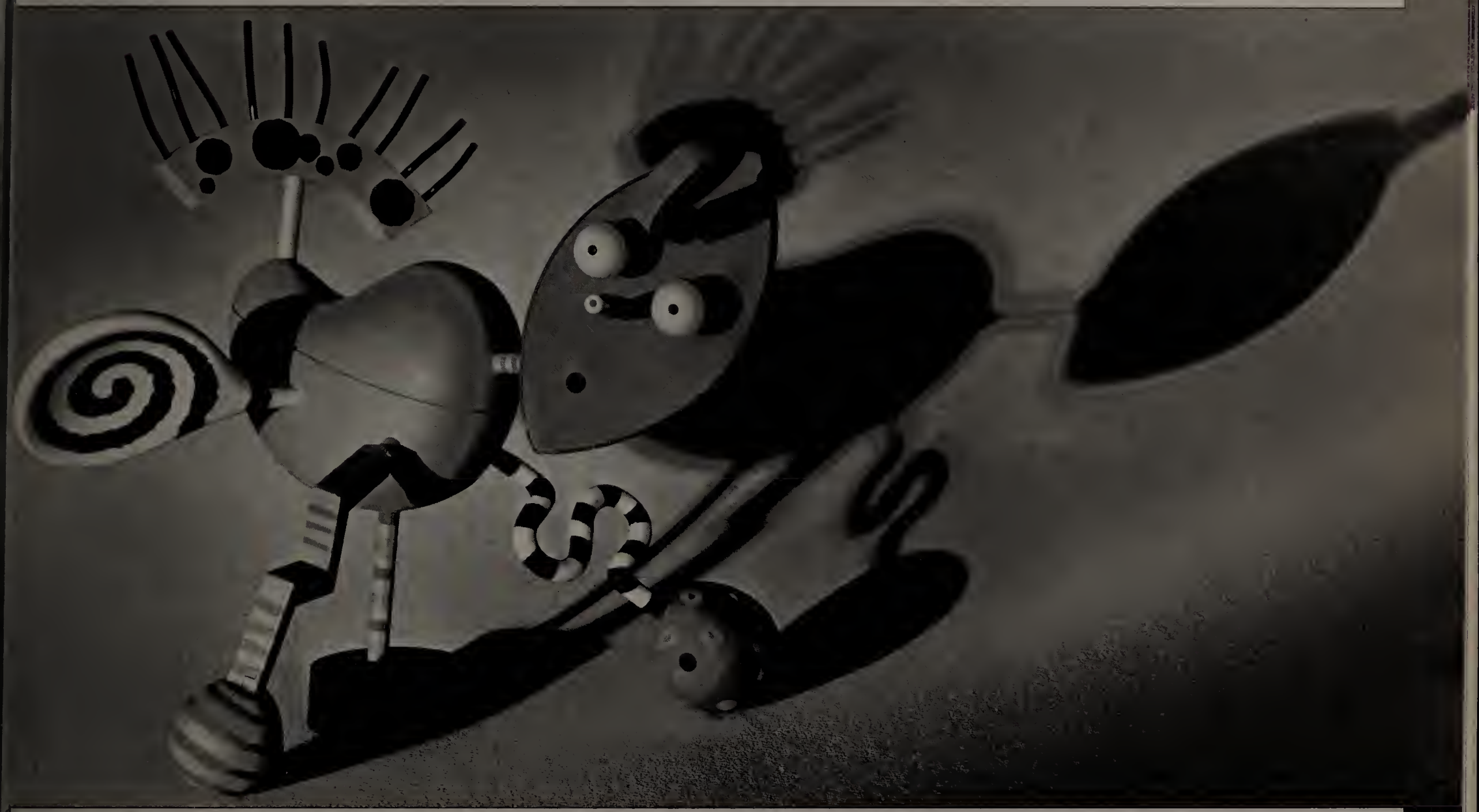

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Europe to benefit from telephone deregulation

Lower prices, increased options expected eventually

By Torsten Busse
MUNICH

Telephone deregulation will eventually lower prices, increase service options and simplify cross-border communications, according to European telecommunications managers. But it will take years for new competition to effect real, noticeable change, they added.

"Telecommunications represents quite a considerable cost to us," said Joseph De Feo, information systems director at London-based Barclays Bank PLC, which is running networks in France, Spain, Portugal and Germany.

"We do believe that over time we will see potentially double-digit declines in prices as more competition emerges," he said.

Jan. 1, 1998 is the day that voice and fax services and infrastructure ownership are to be deregulated. The European Commission ended state monopolies over most value-added telecommunications services in 1990.

Deadline looming

Here is the rundown on where various European Union states stand on the 1998 deadline:

- **United Kingdom:** Previously privatized and opened to competition.
- **Germany:** Plan proposed.
- **France:** Government delayed decision to partially privatize France Telecom until at least September.
- **Italy:** State-run monopoly Telecom Italia has appealed a state antimonopoly agency ruling that it lease its infrastructure to a would-be competitor.
- **Luxembourg:** Received a two-year extension.
- **Ireland, Greece, Spain, Portugal:** Received five-year extensions.

The slow move to reform means a wait for corporate users.

"Users will slowly see benefits from telecom reform, but mainly in the area of rates initially," said Lorenzo Molina, an analyst at International Data Corp. in Milan. "I don't think we'll see much differentiation in terms of services right away."

This is similar to what British users experienced when the UK privatized BT more than 10 years ago.

"It's going to take a while for the changes to happen," said Patrick Marne, communications manager at Mitsubishi Bank in London. "BT took a long time, and I suspect that the other countries will as well."

But the wait will be worth it, Marne said.

"I have had the unfortunate task of putting in some international private wires and ISDN into places such as Madrid and Milan, and it was a nightmare. I expect it to be a lot easier once the market is deregulated," he said.

Other users agreed.

"Competition tends to deliver a consistency of things, like the time it takes to install a service," said Phil Taylor, European telecommunications manager at Baxter Health Care Ltd. in Newbury, England. "It varies from country to country today; it would be good to just know that it takes two weeks to install a service."

Future hopes

Many users hope global telecommunications alliances will make their lives easier by promising the same services worldwide, with local support and simplified billing.

"There is opportunity for life to become very much easier," said Malcolm Stirling, technical director at Europcar International SA in Villepinte, France. Europcar, a pan-European car rental agency, recently installed a Unix system that connects about 3,500 workstations throughout the continent. In the case of Europcar, choosing a single, pan-European supplier, such as Sprint Corp., would mean that "you can go straight to Sprint and say 'implement,' and you can expect the same service level in all countries. You don't have that at the moment," Stirling said.

Whether users switch from the expensive but nevertheless experienced national carriers to new players largely depends on pricing. Coverage will also be a primary concern, users said.

Busse is the IDG News Service Munich correspondent. Cara A. Cunningham, IDG News Service Paris correspondent; Marc Ferranti, IDG News Service Paris bureau chief; and Ron Condon, IDG News Service London correspondent, contributed to this report.

New York

CONTINUED FROM PAGE 49

"Vines is a very stable environment. And beyond that, it represented the best network operating system, given our limited administrative resources," Stahling said.

The DOT has a $4 million annual budget to run the entire network infrastructure. Vines has helped save money in various ways. For instance, the network has only 33 network administrators, as opposed to triple that number for a comparable Novell, Inc. NetWare network, Stahling said.

The DOT is now shopping for both Cisco and Bay remote access devices to link an additional 10 sites that the city plans to bring on-line in the next year.

Another planned project is to move PC users to Microsoft Corp.'s Windows 95. While the agency will keep Windows for Workgroups set up until Windows 95 has been on the market for at least six months, the DOT says the move is inevitable.

The sidewalks of New York, not the desire for more features, drive the Windows 95 upgrade.

"The Department of Transportation is sued for an average of $46 million annually by people who have accidents on city streets," Stahling said. "Even if someone just trips on a sidewalk, we have to produce all the supporting documentation [for the case]."

To produce the documentation, the DOT uses Wang Laboratories, Inc.'s Open/image to generate and reproduce street maps. Open/image was purchased by Microsoft and will be embedded in future releases of Windows 95.

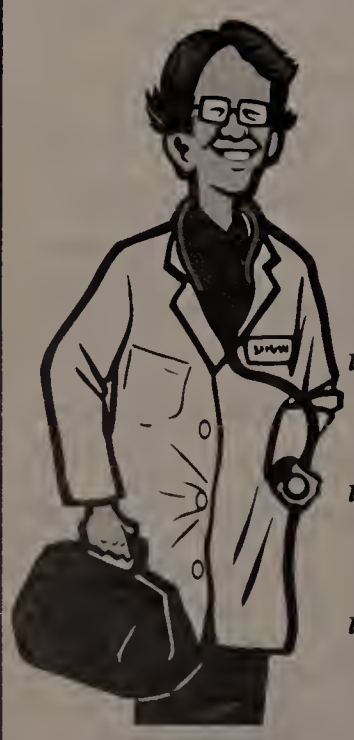
Stahling said the imaging systems reduce the time it takes to reproduce maps for court appearances from 21 steps to seven steps.

High maintenance

New York's 2,000-node Banyan Vines network is used to oversee traffic flow and planning for more than 800 bridges and to maintain 300,000 street lights, 63,000 parking meters and 1.3 million street signs.

MEDICAL ALERT...

Heartburn Traced to Unix "vi" Editor



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Performance Technology, Inc. has unveiled Instant Internet 2.0, a hardware/software product that connects up to 50 concurrent sessions on a Novell, Inc. NetWare or Performance Technology PowerLAN network directly to the Internet.

According to the San Antonio company, Instant Internet 2.0 features dual-Ethernet card support for enhanced security. It also provides multiple box support for increased capacity and fault tolerance and destination host blocking for added management. The multiple box support allows the installation of several Instant Internet 2.0 units on a single LAN.

Instant Internet 2.0 includes options to control user access to destination hosts. It also assigns individual users to one or more specific Instant Internet 2.0 units, with connections attempted in a fixed or random sequence.

The standard Ethernet-based version of Instant Internet 2.0 costs $3,495 per unit.

▶ *Performance Technology (210) 979-2000*

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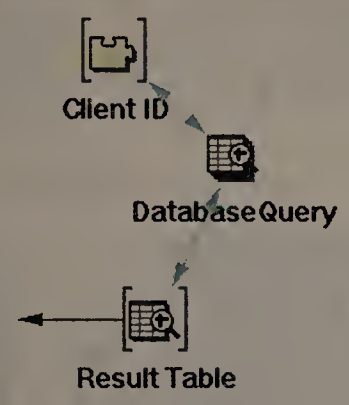

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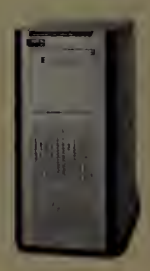

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NEW PRODUCTS, 62
TRAINING VENTURE UNITES SCHOOL, IS, 64

Large Systems

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Photo flash

Magazine conglomerate hooks up digital tape library to put photographs at editors' fingertips

By Thomas Hoffman
NEW YORK

If Elizabeth Taylor lands herself in another hospital next year, *People* magazine's picture editors won't be hard-pressed to dig up a file photo of the lavender-eyed film goddess before deadline.

That is because *People*'s parent publisher, Time, Inc., plans to roll out a digitized photo library in January. It is being built from Time's master collection of more than 20 million photographs.

The system includes an eight-processor Sun Microsystems, Inc. SPARCcenter 2000 machine, an Informix Software, Inc. Online Dynamic Server Version 7.1 database software system and an Odetics, Inc. robotic tape library. The new photo library will enable hundreds of staffers at *People*, *Fortune*, *Sports Illustrated* and other Time titles to search for, retrieve and download photos in a matter of seconds.

With the current setup, it can take hours to request, research and obtain photos from Time's manual file system. That process is expected to be simplified by the on-line system, which Time is developing with Input Creations, an Englewood Cliffs, N.J., consulting firm.

Easy access

Picture editors using Macintoshes and Windows-based PCs will be able to call up photos using Oracle Corp.'s Oracle Developer 2000, Borland International, Inc.'s Delphi or other query tools that Time expects to choose by the end of this month.

"For me, the biggest benefits of using the system will be instant access," said Michele F. McNally, picture editor at *Fortune* magazine. Although 95% of the pictures *Fortune* runs are assigned shots, "it's nice to keep a bank of file photos for late-closing stories," she said.

Time plans to store low- and medium-resolution photos — those consuming 70Kbytes or less of storage space — and their accompanying catalog text on the hard drives of Sun file servers, according to Thomas Smith, director of technology at Time's Editorial Services Division.

High-resolution photographs — those

Photo, *page 65*

Sports Illustrated picture editors *will have ready access to photos such as this one of Houston Rocket Robert Horry via a digitized photo library*

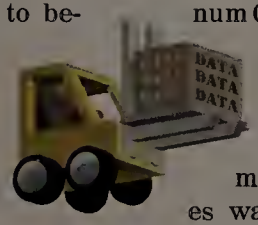
Data warehouses tax administrators, staff

Veteran warehousers advise choosing a standard

By Kim S. Nash
CHICAGO

■ Database administrators beware: Data warehousing projects — which let end users and corporate managers access all the information you safely locked away — will keep you hopping.

Database staffers have had to become human superglue to fit together an array of query tools, databases, data cleansers and extractors that are generally unintegrated, according to users and analysts at Data Warehousing, a conference held here recently.



And more gigabytes means more work.

"Data warehousing is the database administrator's full-employment act," quipped Aaron Zornes, an analyst at Meta Group, Inc. in Stamford, Conn. Meta and Digital Consulting, Inc. sponsored the show.

And warehouses, which are databases designed specifically for business analysis, will require a lot of care until standards stick for passing information between products in this market, Zornes said.

To avoid some migraines, information systems groups should choose just a few warehouse products on which to standardize, said Jerry Sommerville, manager of systems and application development at Alcoa Building Products, a Sydney, Ohio-based division of Aluminum Company of America.

The Alcoa unit started planning its warehouse — designed for sales tracking and analysis — a year ago. Uniformity in query tools and databases was a mandate right from the start, Sommerville said. His four-member team planted Planning Sciences, Inc.'s on-line analytical processing products at the core of the system, which was built to host 65 users.

Tools lacking

But would-be warehousers still lack a set of application programming interfaces (API) or other standards that can shuttle data smoothly through the entire warehouse process, said Rich Finkelstein, an analyst at Performance Computing, a

Warehouses, *page 62*

Philly Fed switches to Unisys

Reserve bank dumps IBM as mainframe vendor

By Neal Weinberg

The Federal Reserve Bank of Philadelphia, which processes 3.5 million checks a day, has bounced its IBM check processing system in favor of one from Unisys Corp.

The Philadelphia Fed's decision marks the first time any of the 12 regional Federal Reserve Banks has switched mainframe vendors. It also breaks a 6-6 tie between IBM and Unisys that has existed for as long as anyone can remember.

Philadelphia Fed's Blake Pritchard: *Downtime was not an option*

Now that it has a majority, Unisys is trying hard to persuade the five remaining IBM banks to jump on the bandwagon.

Although the 12 banks are part of the same system, they operate independently, explained Blake Pritchard, senior vice president in charge of check services at the Philadelphia Fed.

Pritchard said the Philadelphia Fed began weighing whether to switch mainframe vendors four years ago, as the IBM system began to show its age.

A major selling point for Unisys was the check processing software applications that had already been developed in cooperation with the other Unisys Feds. And, Pritchard said, he was impressed with Unisys' commitment to developing check processing and imaging systems.

Pritchard said the conversion, which began in January 1994, was a "large and difficult process." A Unisys V Series mainframe and a variety of document sorters were installed, along with network controllers and communications processors.

Downtime was not an option, Pritchard said.

Win-win

Now that the job is done, Pritchard said the bank is providing "better services to our customers" — the regional banks that rely on the Fed to sort, process and deliver checks to payer banks. Prichard said a customized version of the Unisys Item Processing System (IPS) software, developed for Federal Reserve banks, allows the bank to more efficiently extract data from the mass of incoming checks and swiftly transmit that information to the local banks.

IBM spokesman Doug Halvorsen said the company has upgraded its check processing product line during the past couple of years and doesn't expect any more defections from Fed banks.

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New Products

Platinum Technology, Inc. has unveiled Performance Estimator, a performance engineering tool.

According to the Oakbrook Terrace, Ill., company, Performance Estimator is a Windows-based performance engineering tool that analyzes IBM DB2 MVS software applications while they are in the design phase. It gives database administrators access to existing information from database catalogs and other tools. It lets them analyze and identify performance problems before the problems are incorporated into final application designs.

Performance Estimator features a library of software and hardware metrics, sample mainframe hardware configurations and example models.

Pricing for Performance Estimator starts at $5,000 per single-user license.

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BMC Software, Inc. has announced Data Accelerator for IBM MVS systems.

According to the Houston company, Data Accelerator improves I/O efficiency and reduces elapsed time between batch jobs. It enhances performance in bipolar and parallel processing environments for MVS by using advanced, intelligent techniques to reduce the number of disk accesses.

Data Accelerator also uses fuzzy logic to learn an application's data access patterns for dynamic performance tuning. It doesn't require job control language or program changes.

Data Accelerator offers an optional data compression component to reduce physical storage requirements, according to the company.

Pricing for Data Accelerator starts at $19,600.

▶ *BMC Software*
(713) 918-8800

Warehouses

CONTINUED FROM PAGE 59

consulting firm here.

Open Database Connectivity (ODBC) interfaces help move data between some end-user reporting programs and server databases. But ODBC, a Microsoft Corp. API that lets PCs access data from many databases, isn't everywhere.

For example, products that pull information out of mainframes or minicomputers and format it for other servers are often unable to talk to one another, Finkelstein said.

IS workers at Advocate Healthcare had to write their own Cobol programs to extract data from the firm's Digital Equipment Corp. VAXs, said David Werdegar, a senior database consultant at the hospital and nursing facilities conglomerate in Oak Brook, Ill.

"We didn't find much on the market to help us with that, so we had little choice," Werdegar said.

Warehouse wisdom

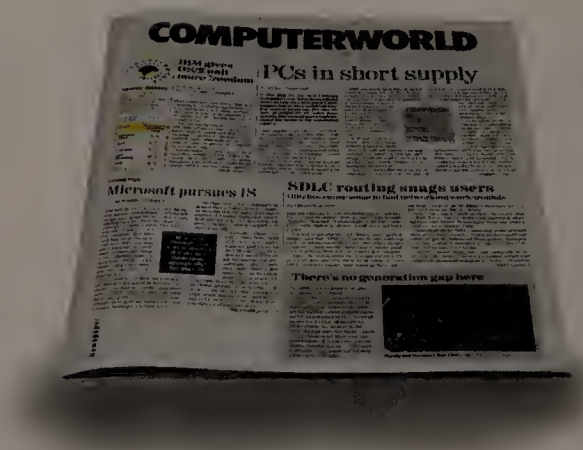
A sampling of views and puns

"We become detectives with very skimpy clues."
– **Aaron Zornes**, Meta Group analyst, on using data warehouses to combine corporatewide information to uncover business trends

Cor•po•rate bu•lim•ia: *Noun.* Illness that compels a company to binge on technology only to purge most products later, when maintenance budgets get too fat.
– IS manager at a Midwest health care company

"Managing expectations of your users is the most important thing you can do as someone in charge of a warehouse project. Don't overpromise."
– **Carole Hershman**, CIO at Transamerica Commercial Finance Corp., Chicago

Mip•o•suction: *Noun.* Process of eating up CPU computing power with runaway queries against a data warehouse database.
– **Karen Rubinshank**, Meta Group analyst



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CUSTOMERIZE is one example of what Unisys means by information management—using information as an asset to make an enterprise more competitive and responsive. For Signet, it resulted in a stronger bond with a key customer. To receive a copy of "Customerize for Growth and Profitability," reach us on the Internet at **http://www.unisys.com/adv** or call **1-800-874-8647, ext. 24**.

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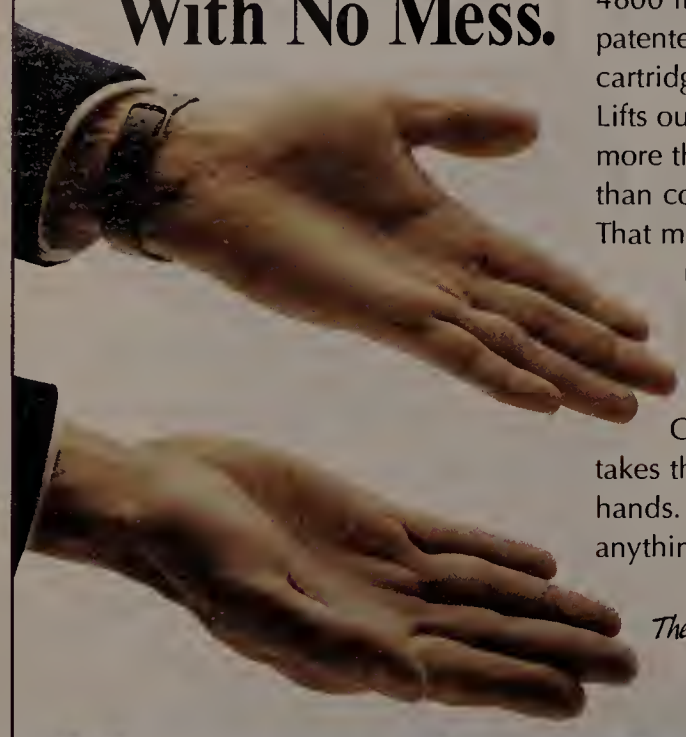

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Training venture unites school, IS

By Gary H. Anthes

TEMPE, ARIZ.

An unusual partnership between academia and industry may revolutionize the way some companies train their employees.

The Learning Solutions Research Laboratory at Arizona State University is creating "a cafeteria of learning solutions for deployment at corporations," said associate professor Paul Privateer, director of the laboratory. Its mission is no less than to redefine the relationship between technology and learning and improve the payoff from the $4 billion U.S. industry spends on training every year.

Arizona State's Paul Privateer *says he hopes to develop a 'virtual learning environment'*

Privateer contrasted the laboratory's work with stereotypical university research, which often fails to flow from the ivory tower to the real world. Instead, the university establishes partnerships with end users — the companies seeking better training methods — and information technology vendors, which jointly fund development of the new learning systems.

Indeed, the laboratory's work is down to earth and has earned high marks from its cost-conscious sponsors.

Real world

In one project, the laboratory is working with Intel Corp.'s Intel University to develop virtual training systems for semiconductor manufacturing. The laboratory and Intel will develop an expert rules-based simulation of a diffusion furnace used in the manufacture of silicon wafers. The system will display the furnace's operations in virtual reality for the trainee and also simulate the interactions of some 65 people with the furnace.

The system, which will be in use early next year, uses a Silicon Graphics, Inc. Crimson computer for the simulations. The machine takes input from a user-controlled electronic glove and returns output to a helmet-mounted display.

Alston Fergusson, head of Intel's Components Training Division, said Intel does some hands-on training in the manufacturing "clean room" where the furnace is located, but that introduces contaminants and halts production in the $1 billion fabrication facility.

"Training in the clean room [is] prohibitively expensive, so any time you can do training in a simulated environment, there is a real benefit," he said. Privateer said virtual training programs will significantly reduce training costs. He said all cost data is confidential. However, Privateer said it costs $1 million per hour to shut down the assembly line for training.

Privateer said he hopes eventually to develop a "virtual learning environment" for the entire semiconductor manufacturing process. "This is a different kind of cognitive process, and it's more memorable," he said.

Indeed, improving retention is a key tenet of much of the laboratory's work. When the Arizona Department of Transportation significantly altered its business practices as part of a move to client/server computing, it faced a tough challenge: how to quickly train hundreds of employees in a host of new business and systems procedures.

The answer, from the learning research laboratory, was a program based on team problem solving, said Oskar Anderson, a senior consultant at CACI International, Inc. in Arlington, Va., which helped the state agency move to client/server technology.

Rather than listening to lectures on systems procedures, employees were given business problems to solve, then asked how those solutions translated into systems use, he said.

"By making people think things through, rather than memorizing the syntax of a new system, retention is incomparably better," Anderson said. "And it was much quicker because they were working in groups."

Anderson said he will use the same approach to training in a business process re-engineering project for the Wisconsin Department of Transportation.

Where to look

Internet users can find information about Arizona State's Learning Solutions Research Laboratory at http://aspin.asu.edu:80/provider/LSRL/

Brief

PeopleSoft goes for Feds

PeopleSoft, Inc., the Pleasanton, Calif.-based maker of software for human resources and other business applications, is modifying its products for the federal government market and opening an office near Washington under the direction of Jeffrey Carr. A new division, PeopleSoft Federal, will offer PeopleSoft HRMS for Federal Government in the first quarter of federal fiscal year 1996.

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Photo flash

CONTINUED FROM PAGE 59

that command up to 4.5M bytes of storage — will be stored on digital linear tapes that will be housed in the Odetics tape library and at off-site facilities for safekeeping.

Tape: Slower but cheaper

Although storage analysts say it generally takes longer to retrieve images from tapes than optical discs, Smith gave several reasons for Time's decision to go with the linear format. Tape storage "is more economical and feasible to access," Smith said.

While he wouldn't disclose how much Time spent to build its digitized photo library, Smith estimated that the system cost one-third to one-fourth what competitive systems cost.

For example, analysts said Eastman Kodak Co., which unveiled its Kodak Picture Exchange in 1993, spent $30 million to $50 million to develop the system. An official at the Rochester, N.Y., imaging giant declined to comment.

Picture perfect

Time's digitized photo library, which is being built from the organization's master collection of 22 million photos, will go into production next January. It is expected to provide the publisher of *Fortune*, *People* and other magazines the following benefits:

- Create new products.
- Dramatically improve automation of Time's on-line card catalog system, which allows for flexible searches.
- Retrieve individual photos on deadline from a robotic tape library within two minutes vs. half an hour or more under the current manual filing system.
- Enable picture editors at *Sports Illustrated* and other publications to capture photos in an electronic folder and cut and paste them in with computer-based text.
- Ensure the integrity of historic photos by storing them on tape in offsite warehouses.

BESTY HAYES

— Thomas Hoffman

Briefs

SAP scores customer, port

German software maker SAP AG scored another high-profile customer, signing Microsoft Corp. as a new user of its R/3 client/server software. SAP said Microsoft will use its R/3 general ledger, procurement and asset management applications to support its worldwide financial operations. Meanwhile, **Pyramid Technology Corp.** in San Jose, Calif., announced that SAP is using its Reliant RM1000 Parallel Server to develop its next generation of R/3 client/server software. This assures that future R/3 software will be fully optimized to run on massively parallel systems, a Pyramid spokeswoman said.

StorageTek settles lawsuit

Storage Technology Corp. in Louisville, Colo., agreed to pay $55 million to settle a shareholder class-action lawsuit and related litigation dating back to 1992. StorageTek said it will foot $30.7 million of the bill and charge that amount against its profit in the current third quarter. The rest will be covered by its insurance. The settlement of the suit, which involved stock losses in 1991 and 1992, still needs to be approved by the U.S. District Court in Denver.

Mmm, mmm outsourcing!

Campbell Soup Co. in Camden, N.J., has signed an outsourcing contract that it hopes will save it $180 million over 10 years. The contract gives responsibility for a large chunk of Campbell's mainframe, midrange and desktop systems to IBM's **Integrated Systems Solutions Corp.** Campbell's internal IS group will concentrate on developing strategic business applications while ISSC handles mainframe, midrange and desktop systems.

DEC's Palmer heads project

Robert B. Palmer, chairman, president, and chief executive officer at Digital Equipment Corp., has been named the new chairman of the **Computer Systems Policy Project**, a coalition of CEOs from 13 U.S. computer companies. It was founded in 1989 to develop and advocate public policy positions on trade and technology issues. Palmer, 54, replaces James A. Unruh, who is chairman and CEO at Unisys Corp.

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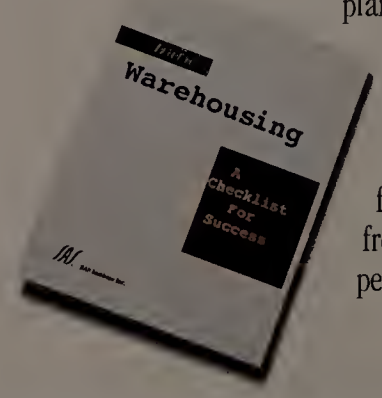

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MOTOROLA'S IRIDIUM: A HUGE SOFTWARE DEVELOPMENT PROJECT, 70
NEW PRODUCTS, 71

Application Development

CASE • LANGUAGES • TOOLS

Borland raises stakes for development tools

Delphi 32 battles with Visual Basic to become environment of choice

By Elizabeth Heichler

Development tools

The dominant players in the Windows software development tools market, Borland International, Inc. and Microsoft Corp., recently laid bare their offerings for developers moving into Microsoft's Windows 95 world.

Borland's Delphi 32 and Microsoft's Visual Basic 4.0 are competing to be the visual development environment of choice for corporate developers, a segment of the tools market where Powersoft Corp.'s PowerBuilder is also a popular option. Based on early user reactions, Visual Basic may retain its crown as the easiest to learn rapid application development tool, but Delphi will continue to gain ground among developers looking for more power and flexibility.

Right direction

"Borland's technology in Delphi is getting rave reviews. Their next step is to make sure they craft an effective enterprise product out of it," said Chris Le Tocq, president of SoftTracks Software Research in Los Altos, Calif. "And certainly the direction Microsoft has gone with [Visual Basic] is to reinforce it for use in the corporate environment."

One-on-one

Visual Basic and Delphi have beefed up database access capabilities in their Windows 95 versions. And both are emphasizing the use of components, with common support for OCX, or OLE controls.

But Delphi offers the ability to deliver applications that are faster, stand-alone executable files. Visual Basic doesn't do this because it is an interpreted language that must be processed at runtime. Users who have examined both said Delphi offers more powerful object-oriented programming facilities.

With Delphi 32, previewed two weeks ago at Borland's annual developers conference in San Diego, developers can use both OCXs and Delphi-specific components. The tool, which compiles code into stand-alone Windows 95 executable files, includes a more powerful compiler, enhanced visual design capabilities and more database connections and design support than the 16-bit version of Delphi.

At Ensemble Systems Consulting in Dallas, developer Mike Leftwich has used Delphi to build multimedia kiosk applications. He said he is pleased he can develop in Delphi 32 but deploy applications on 16-bit platforms, if necessary.

"Borland has heard loud and clear how important this is," he said. As long as developers do not use features specific to the 32-bit environment in their applications, those applications can be recompiled using the current version of Delphi for deployment on Windows 3.1. And Borland said most 16-bit Delphi applications can be recompiled for 32-bit using the new version of the tool.

Ensemble also has a prerelease copy of Visual Basic 4.0 but hasn't found it as attractive as Delphi because it is still interpreted at runtime and is not really an object-oriented language, according to Tony Goodman, Ensemble's president.

Pricing for Delphi 32 has not yet been announced; the software is available in prerelease form to members of Borland's Connections program. Visual Basic 4.0 will ship Sept. 12. It costs $499 for the Professional Edition and $999 for the Enterprise Edition with remote procedure calls support.

TOOLS DUEL

DELPHI 32
- Full 32-bit, with support for 16- and 32-bit deployment
- Faster 32-bit native compiler
- Support for both OCXs (OLE controls) and native Delphi components
- Price and availability: Not disclosed

VISUAL BASIC 4.0
- Full 32-bit, with support for 16- and 32-bit deployment
- Can create OLE automation servers and distribute applications logic to Windows NT servers
- Price: $499 (professional version); $999 (enterprise version)
- Availability: Sept. 12

Closed curtains

Borland is still trying to figure out what to put in Delphi 32, which is due out 90 days after Microsoft's Windows 95.

For instance, when asked if Delphi 32 would make it as easy for developers to create OCXs as they can now create Visual Control Libraries, Anders Hejlsberg, Delphi's chief architect, said, "We haven't decided if that's in or out yet."

Or how about whether Delphi 32 will include a data access component such as PowerBuilder's DataWindows?

"There are a couple of things we're still keeping behind the curtains," the product manager said.

—Elizabeth Heichler

Tool gives Visual Basic a run for its money

By Elizabeth Heichler
SAN DIEGO

Trying to forget those pesky memory management bugs? CodeGuard, a new debugging tool from Borland International, Inc., may help users lose those debugging blues. The tool may also give Borland an edge over Microsoft Corp. in the programming tools market because Microsoft doesn't have an integrated debugging tool with Visual Basic.

Memory management bugs are difficult to find. They don't occur every time an application runs but may cause errors up to 20% of the time when memory conflicts occur. CodeGuard automatically locates and diagnoses memory management bugs.

Once installed, CodeGuard works within Borland C++, unlike competitive third-party add-ons, which aren't as tightly integrated with the C++ development environment. The tight integration means users don't need to switch between different tool environments when debugging applications.

Having the facility closely integrated with C++ should simplify the debugging process, said Borland C++ user David Corbett, software development engineer at AT&T Global Information Solutions in St. Paul, Minn.

While CodeGuard will bring the most immediate benefit to current Borland C++ users, the company has also laid out some of its plans for the next version of Borland C++, Release 5.0, due in December.

Among the main new features slated for the C++ tool set are the following:

- A utility that converts Microsoft Foundation Classes (MFC) — a class library for building Windows user interfaces — into ANSI-standard C++ compatible with the Borland compiler. According to Bill Dunlap, Borland languages product manager, Borland C++ has previously been unable to use MFC because it contains nonstandard C++.
- An updated version of Borland's Object Windows Library (OWL) that will create 16-bit emulations of the new user interface controls in Microsoft's Windows 95. This will allow developers to write one set of source code to give users the 32-bit world of Microsoft's Windows 95/Windows NT, or the Windows 95 look and feel to Windows 3.1 applications.

While Borland maintains OWL is better than MFC for providing Windows user interface functions to applications, the addition of MFC support recognizes market realities, according to observers.

"I'm glad they're putting MFC support into Borland C++ — if you look in the job ads, no one's looking for OWL," said a C++ user attending Borland's developers conference here two weeks ago who asked to remain anonymous.

Brief

Franz joins Digital

Franz, Inc. in Berkeley, Calif., has announced an agreement with **Digital Equipment Corp.** under which Franz will port its dynamic object-oriented language tools, Common Lisp Object System (CLOS), to Digital's Alpha platform. Dynamic languages such as CLOS let developers tailor applications after they have been deployed without having to access source code, modify and recompile it.

PAUL GRAY
COMPUTERWORLD READER SINCE 1990
Director of IS Operations
PC Service Source

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SOMEWHERE, IS TROUBLESHOOTING

SOME COMPUTER OR PRINTER THAT'S

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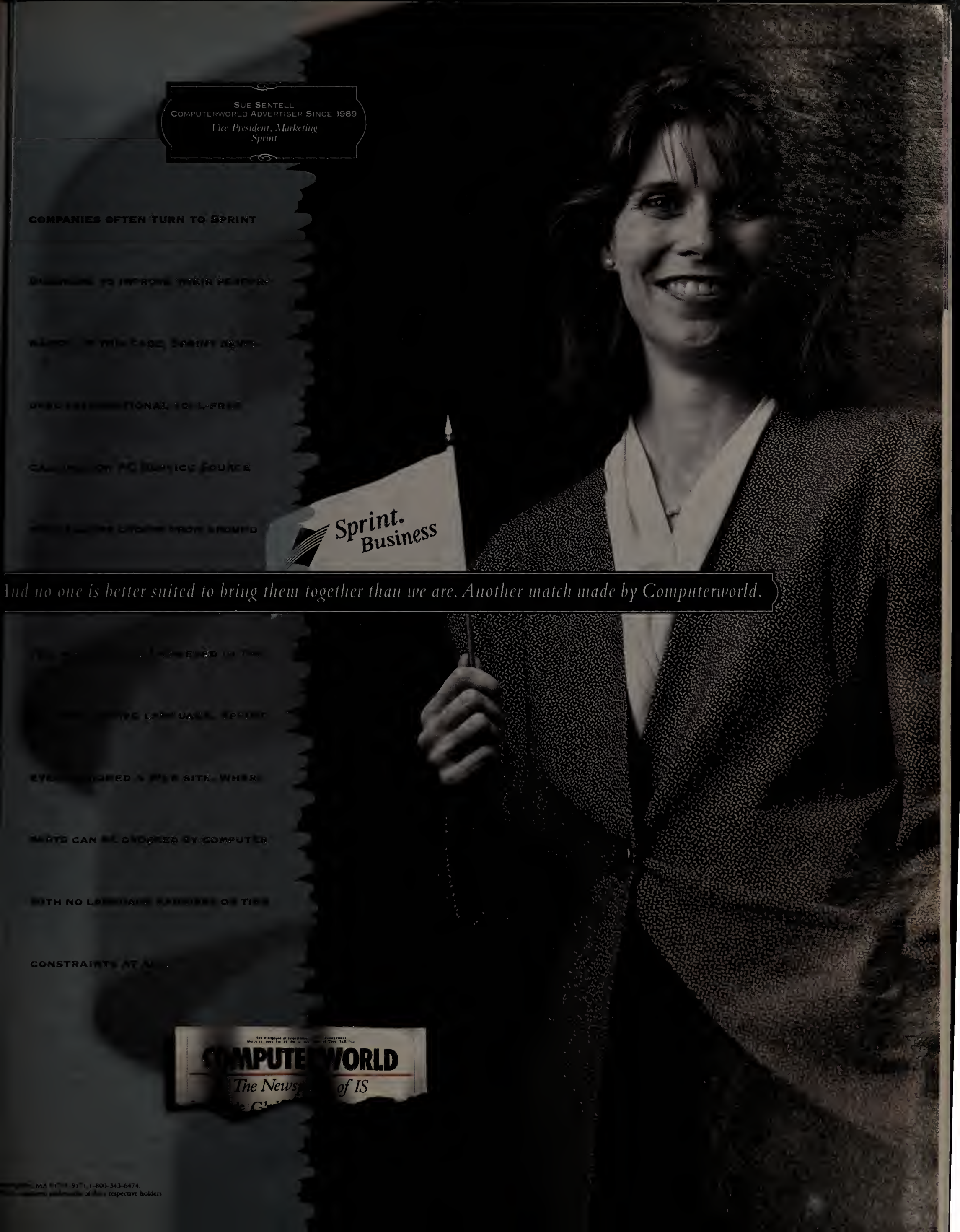
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Motorola launches huge systems development effort

Company pulls out all the stops to ensure Iridium is successful

By Gary H. Anthes
CHANDLER, ARIZ.

Unfolding here in the baking Arizona desert is one of the most complex systems development efforts ever undertaken. At the project's completion, which is expected in a little more than three years, business travelers anywhere in the world will be able to use pocket-size portable telephones to send data and voice messages to their offices via a digital network in space.

The network, the $3.4 billion Iridium system, is being developed by Motorola, Inc. for a consortium called Iridium, Inc. It will require a staggering 15 million lines of computer code.

The code will be used for a variety of functions, including the following:

- To control communications satellites.
- To manage the network.
- To switch calls.
- To handle back-office billing and administrative chores.

While the job sounds impossibly complex, Motorola is counting on existing software from various sources to handle much of it so that only 2 million to 3 million lines of new code will have to be written.

But designing, coding and testing even 1 million lines of software is a huge and risky job, and Motorola is employing a number of high-technology development aids to get the job done right (see story at right). Even more important, the company said, is its reliance on two key management concepts — a fanatical attention to software engineering disciplines and very close relationships with suppliers.

Software development

"One way of looking at this is as a very large, very complex, never-been-done-before project, but another way of looking at it is as a software maintenance project," said Bud Clay, assistant director for Iridium development at Motorola's Satellite Communications Division. "It's a brand-new system with a new architecture. But it uses existing software pieces, and the pieces are major systems in their own right."

Frank Dzubeck, president of Communications Network Architects, Inc. in Washington, said Motorola has joined a small band of companies, including the long-distance carriers, developing very complex systems for telecommunications. "This stuff is not trivial," he said. "It's leading-edge, object-oriented stuff. The systems will be very esoteric."

While Motorola is dictating surprisingly little in the way of standards to its 10 major software developers, it is relying on gentle persuasion and outright intervention to ensure its goals are met.

For example, when McDonnell Douglas Space and Defense Systems agreed to deliver 60,000 lines of software but admitted it had little experience with object-oriented technology, Motorola sent people skilled in object-oriented programming and C++ to train McDonnell Douglas developers.

"They worked with us from Day 1 and really brought us up to speed," said George Kersels, vice president and general manager of McDonnell Douglas' Houston division.

Software Technology, Inc. in Melbourne, Fla., is supplying 200,000 lines of code to Iridium, 60% of it custom, according to Jeff Clift, company president. He said Motorola sent three people to the company several days in advance of a design review to help prepare for the review, and they stayed to help address deficiencies.

"The intent is to drop the boundaries between supplier and contractor," Clift said.

Clay conceded that it isn't easy to know just how far to go in setting rules for contractors, each of which has unique strengths, weaknesses and methods.

"There is no common denominator on this project; it depends on the supplier," Clay said. "What's difficult is striking a balance between exerting too much conformity on suppliers and having no control at all."

Programmer boot camp

Motorola sent about two dozen would-be suppliers to a one-week precontract boot camp called the Capability Maturity Model for Software. It is a process defined by the Software Engineering Institute (SEI) at Carnegie Mellon University to evaluate the maturity of a firm's software development and maintenance practices.

"If their SEI level is two or less [on a five-point scale], we have a process improvement plan in place to bring them up," said Bary Bertiger, a corporate vice president and assistant general manager at Motorola.

Motorola's emphasis on process and metrics is absolutely necessary in a project this complex, said David Zubrow, a member of the technical staff at SEI in Pittsburgh. Without them, best practices are not retained, particularly if there is significant turnover. "It's necessary if you want to have 10 years of experience rather than one year of experience 10 times," he said.

While acknowledging Iridium's complexity, Dzubeck said the risks are nevertheless controllable. "The scope is vast, but the complexity is overcome by time. And what Motorola has at the moment is some lead time over its competitors in understanding the problem," he said.

There are half a dozen or so competitors vying to set up low-orbit satellite systems for voice and data communications (see graphic). "There is going to be some shakeout among the players, but Motorola happens to be the most technologically oriented," Dzubeck said. "And the reward at the other end is astronomical."

Iridium's satellites *will feed signals to various types of receivers and devices. Some devices are only conceptual, such as this solar-powered phone booth.*

Iridium system overview

Iridium will, in essence, extend cellular telephone service to all parts of the world — including ships at sea, airborne craft and remote areas with no existing communications infrastructure.

Voice, data, fax and paging messages will be routed over a network of 66 low-earth orbit satellites. The satellites can relay calls directly through space to other satellites or to ground-based gateways into existing local telephone networks.

Iridium keeps track of where subscribers are anywhere in the world by tracking signals from each telephone handset.

Iridium will route calls over existing cellular systems if possible, relying on the more expensive space network to serve those areas without cellular service, such as villages in the most remote parts of the world.

Conventional cellular systems hand off users' calls from tower to tower as users move on the ground.

"But with Iridium, instead of you moving by the towers, satellites will move by you at 17,000 miles per hour," said Bud Clay, assistant director for Iridium development.

— Gary H. Anthes

Tools of the trade

Key development tools and standards employed by Motorola include the following:

- Object-oriented concepts and C++. Objects will reduce costs mostly during software maintenance, not initial development, according to Motorola.
- IBM's Configuration Management Version Control (CMVC) tool for Unix. The only standard dictated to suppliers by Motorola is that all software be submitted in CMVC-compatible format.
- Orbix, an "object broker" system from Iona Technologies Ltd. in Boston. Orbix is "middleware" that allows Motorola to encapsulate large chunks of code and link them as objects.
- The G2 development environment from Gensym Corp. in Cambridge, Mass. G2 is good for implementing graphical user interfaces to real-time applications, Motorola said. For example, it will be used to implement the function that allows engineers to drill down from high-level network alerts to the details behind a network failure.
- The SEER-Software Evaluation Model from Galorath Associates, Inc. in Los Angeles. It is a tool for estimating resource requirements for large software projects. Motorola uses it as a "sanity check" for empirically derived estimates.
- The Project Planner scheduling software from Primavera Systems, Inc. in Bala Cynwyd, Pa.

— Gary H. Anthes

Braun Technology Group has announced Smart Object Interface, an object class library for Powersoft Corp.'s PowerBuilder developers.

According to the Chicago company, the product lets PowerBuilder developers create custom on-line analytical processing (OLAP) applications for Arbor Software Corp.'s Essbase multidimensional database server. The Smart Object Interface gives users an application framework and a set of reusable PowerBuilder user objects. This lets developers use the Data Windows painter to access Essbase, shielding them from direct interface with the Essbase application programming interface function calls.

The product also includes objects for database connection, member selection, report and calculation script control.

The Smart Object Interface costs $995.

▶*Braun Technology Group*
(312) 443-1318

Integra Technology International, Inc. has introduced Integra Business Application Builder 3.0 for C++ and Microsoft Corp.'s Visual Basic.

According to the Bellevue, Wash., company, the product is a set of integrated software components designed to bring speed and power to application developers using C++, Visual Basic and Microsoft's BackOffice.

Integra Business Application Builder 3.0 addresses more than 30 workgroup and departmental Open Database Connectivity-compliant databases running under Microsoft Corp.'s Windows, Windows 95 and Windows NT, Unix and VMS, among other operating systems.

Integra Business Application Builder 3.0 costs $299.

▶*Integra Technology International*
(206) 688-3522

Advanced Software Technologies, Inc. has announced Graphical Designer 1.2, an object-oriented design and re-engineering tool.

According to the Denver company, Graphical Designer 1.2 lets developers generate C++ and C code directly from software designs and reverse-engineer existing C++ and C software with automatic generation of designs. It also supports the creation and reuse of software components.

Graphical Designer 1.2 runs on Sun Microsystems, Inc.'s SunOS and Solaris, Hewlett-Packard Co.'s HP-UX and Silicon Graphics, Inc.'s Irix.

Pricing for Graphical Designer 1.2 starts at $4,999 for the first floating developer seat.

▶*Advanced Software Technologies*
(303) 730-7981

TechBridge Technology Corp. has unveiled Trio Pro 2.1 for Smalltalk, an add-on development tool for ParcPlace-Digitalk, Inc.'s Visual Smalltalk.

According to the Toronto company, Trio Pro 2.1 for Smalltalk is a visual fourth-generation language application development tool that simplifies the creation of Smalltalk applications. It is packaged as a programming-smart framework of more than 800 classes with a visual form designer.

Trio Pro 2.1 for Smalltalk features an advanced widget set, database wrappers and business graph classes.

Trio Pro 2.1 for Smalltalk costs $450.

▶*TechBridge Technology*
(416) 222-8998

Parity Software Development Corp. has introduced VoiceBocx VBX, a tool for application developers creating multiport, Dialogic Corp.-based call processing systems.

According to the San Francisco company, VoiceBocx VBX is a custom control for developers of call processing applications who use Microsoft Corp.'s Visual Basic. It lets developers create applications in office voice mail, banking by phone, automated order entry, telephone classifieds and fax-back services. The product was designed to take advantage of the advanced capabilities of Dialogic's hardware.

System requirements include a Visual Basic controls (VBX)-compatible host program such as Visual Basic 3.0 and a Dialogic voice board.

Pricing for VoiceBocx VBX starts at $895 for a two-line system.

▶*Parity Software Development*
(415) 989-0330

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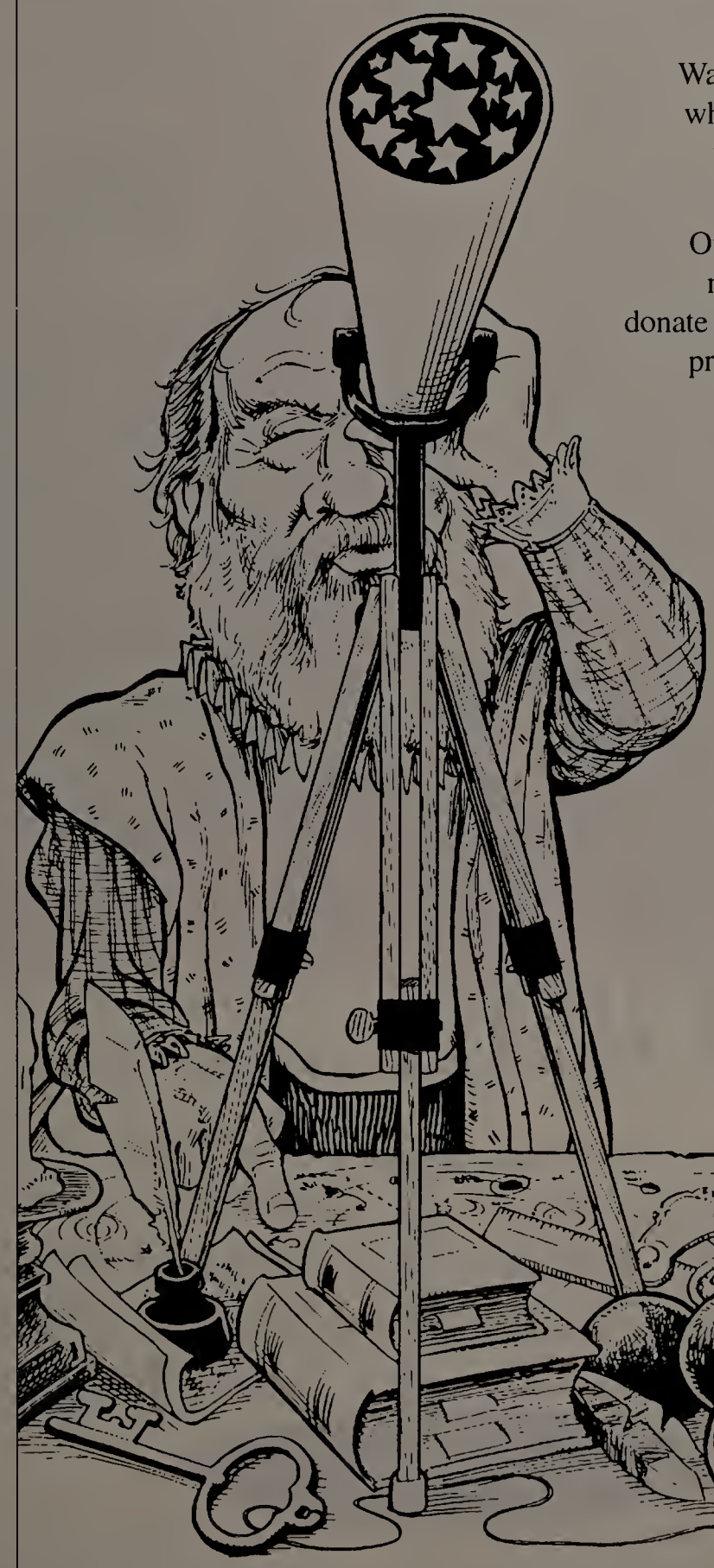

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INSIDE:
Outsourcing: A game for losers, page 75
Calendar, page 79

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Like SQUEEZING money from marble

State Street and other custodian banks that guard the assets of big investment institutions depend on ambitious technology to woo customers. Are the customers happy?

BY MONUA JONAH

In the intensely competitive business of acting as custodians for money, technology investments can separate the winning custodian banks from the losers.

There was a time when banks, mutual funds and pension funds acted as their own "custodians" — record keepers, accountants and safeguarders of the assets they managed. But in the past 25 years, global investing has reached huge volumes and staggering complexity in terms of the number of currencies, kinds of instruments and levels of risk.

Now, institutional investors prefer to outsource the custodian and transaction processing functions so they can save time, computing power and staff. Over time, the business is being dominated by big players with technological savvy.

"It's quite clear that you're seeing market share shift," says Diane Glossman, senior bank analyst at Salomon Brothers, Inc. in New York. "The top-tier players are gaining market share against tertiary players that haven't made the technological investment."

What kind of technology are the top custodians — including The Chase Manhattan Bank NA, Bank of New York and State Street Bank & Trust Co. — using to woo customers? And is this technology meeting their customers' diverse needs?

Basically, what the custodian banks keep is information: Which broker bought those German bonds. When that stock purchase on the Kuala Lumpur stock exchange finally was "settled." What dividend was declared and when it was paid.

If this transaction-processing data was readily available to investment profession-

Custodians, *page 74*

Custodians

CONTINUED FROM PAGE 73

als at their desktops and they could slice and dice the data, the information could actually be helpful in making investment decisions.

Trouble is, this data arrives in multiple formats from many sources worldwide. Much of it is now stored in mainframes that end users can't easily access, even with the use of client/server systems.

Here's how one custodian — State Street Bank — is attempting to solve this conundrum and what two of their clients think of State Street's solution.

State Street Bank

Boston-based State Street Bank has a reputation for using technology to compete aggressively with bigger banks for the custody business. It has leveraged its traditional strength in servicing mutual fund transactions to become one of the world's largest custodians, with $2 trillion in assets under custody. State Street has 2,000 informations systems staffers, 60% of them are programmers and application developers.

"They are much more focused than their competitors. Basically, securities processing is what they do for a living," Glossman says. "They have long been known for their technical prowess in reporting systems."

State Street is offering its biggest clients a high-end, multicurrency accounting and custody system called Global Horizon Interchange. Interchange creates an architecture for linking the bank's systems with those of its clients. It makes data from State Street's mainframe available to end users in a client/server environment in an easy-to-use form that might help investment decisions.

With Interchange, "the idea was not to be constrained to batch processing kinds of applications that sit at the investment manager's site, but to provide decision support," explains Dave Sexton, State Street's director of information technology.

Sexton, a 19-year veteran of the bank, recognized that State Street's custody record keeping, accounting responsibilities and its regular banking activity create a vast pool of information.

Interchange has many innovative features. Robert W. A. Kay, who heads GSCS, Inc., a banking and technology consulting firm in New Providence, N.J., praises its ability to meet the needs of various clients, such as pension funds and portfolio managers. "What distinguishes Interchange is the comprehensiveness of its design," he says.

Bringing investments to light

One of the State Street clients using Interchange is General Electric Investment Corp. (GEIC), a Stamford, Conn.-based subsidiary of General Electric Co. that manages $47 billion in assets.

Using applications written by State Street, GEIC portfolio managers/traders can have several views of the data. They can see the impact of a hypothetical trade on their portfolio. They can view trading activity by currency, country or asset type, broadly or in fine detail.

With Interchange, says Rich Farrelly, GEIC's vice president of systems and support operations, fixed-income portfolio managers frequently query the system, rather than wait for programmers to create reports.

"We've gone leaps and bounds beyond what we used to have on the back end," Farrelly says. "But we don't yet have something that's helping us make better investment decisions."

The reason, Farrelly says, is that GEIC would like to use a single system for trading as well as record keeping. That means Interchange would, among other things, be capable of trade entry and assessing holdings at frequent intervals throughout the day.

"That's a long way away. We're working with State Street to make the necessary software modifications for an active portfolio management tool," Farrelly says. "As of now, it's a back-end reporting tool with a lot of promise."

Calsters' perspective

Another Interchange user is the California State Teachers Retirement System, or Calsters, in Sacramento. It has $56 billion in assets, most of it managed by outside managers.

In 1994, State Street Bank spent $135 million – about 10% of its $1.36 billion in revenue – on systems, including IS salaries.

The setup is similar to GEIC's. But in addition to reports once a day on holdings and transactions, State Street provides a midday report on the holdings of Calsters' short-term portfolio of highly liquid securities.

With Interchange, "we've been able to get more detailed, more accurate information, and the quality of the data and our decisions have improved," says John Petzold, assistant branch chief of investments at Calsters.

The SQL data can be accessed from off-the-shelf products. Because many views of the data are available, it's easier for Calsters' investment officers to monitor outside managers — for example, how they are allocating asset groups.

But Interchange has its limits, he says. "There was an initial hope that, now that the data is down here [in the server], we would be able to do everything here. But the reality is that the data was in tables that didn't necessarily lend themselves to being viewed. So State Street had to write applications for us, and we rely on their continuing support."

"Interchange has been quite successful in meeting today's expectations," Glossman says. "For the moment, it is considered in the vanguard of products. However, the history of the business is that expectations grow more sophisticated over time. If all State Street were to do were to rest on its laurels, in five years Interchange would be insufficient." ■

Jonah is a freelance writer in Palo Alto, Calif.

INSIDE GLOBAL HORIZON INTERCHANGE

Q. What is Global Horizon Interchange?
A. Interchange is an open architecture for linking State Street's systems with its customers. Interchange enables data to be downloaded from a mainframe to a client/server environment and be presented to users in a flexible, accessible way. In its global custodian, accounting and banking functions, State Street receives — through electronic links or by fax — data from multiple sources in more than 70 countries.

Q. On what platforms does Interchange run?
A. The system runs on IBM's ES 9000s, Tandem Computers, Inc.'s Himalayas and Digital Equipment Corp. machines housed in Quincy, Mass. State Street software turns transactions and other data into messages and sends them to users' mailboxes or Internet addresses. Messages are transmitted via Cisco Systems, Inc. routers to a server at the customer site or any State Street site worldwide. The server runs any relational database management system.

Q. And on the client side?
A. Interchange users at GEIC use IBM or Compaq Computer Corp. 486 and Pentium machines running Windows that are linked by Novell, Inc. NetWare 3.12. The Interchange server, provided by State Street, is a Hewlett-Packard Co. HP 9000 loaded with a Sybase, Inc. relational database. For the actual trading, GEIC's bond traders use terminals from Bloomberg Financial Markets L.P. in New York. Data from Bloomberg is fed to the State Street mainframe throughout the day.

— Monua Jonah

AN INTERCHANGE EXCHANGE

Clients are impressed by State Street's Global Horizon Interchange, but they're still looking for further integration.

STATE STREET'S GOAL:

With Interchange, "the idea was not to be constrained to batch processing but to provide decision-support kinds of applications that sit at the investment manager's site."

DAVE SEXTON, DIRECTOR OF INFORMATION TECHNOLOGY, STATE STREET BANK & TRUST

CLIENTS RESPOND:

"We've gone leaps and bounds beyond what we used to have on the back end, [but] we don't yet have something that's helping our managers make better investment decisions."

RICH FARRELLY, VICE PRESIDENT OF SYSTEMS AND SUPPORT OPERATIONS, GENERAL ELECTRIC INVESTMENT

"We've been able to get more detailed, more accurate information, and the quality of the data and our decisions have improved. [But] the data was in tables that didn't necessarily lend themselves to being viewed. So State Street had to write applications for us...."

JOHN PETZOLD, ASSISTANT BRANCH CHIEF OF INVESTMENTS, CALIFORNIA STATE TEACHERS RETIREMENT SYSTEM

THE VIEW FROM WALL STREET:

"For the moment, [Interchange] is considered in the vanguard of products." However, "if all State Street were to do were to rest on its laurels, in five years Interchange would be insufficient."

DIANE GLOSSMAN, SENIOR BANK ANALYST, SALOMON BROTHERS

OUTSOURCING: A game for losers

Paul Strassmann's

REVEALING INDICATORS

Strategy isn't driving outsourcing. Statistics show the real reason companies outsource is simple: They're in financial trouble.

Outsourcing most of a company's information technology budget is more like an emetic than a miracle cure.

Despite all of the reasons offered in the press, there is only one good explanation that fits almost every case of large-scale outsourcing. The outsourcers are trying to return to profitability by cutting employment — in part by no longer maintaining a homegrown capacity to manage information technologies.

The puzzle

I didn't start out thinking this way. What I read in the magazines was entirely plausible, despite my personal acquaintance with two huge outsourcing contracts that made the companies unable to respond to competitive encroachments.

Announcements about the dismissal or transfer of computer personnel include imaginative stories about why a function once seen as a critical success factor can now be reassigned to outsiders. Some corporations claim their IT has ceased to be a "core competency." For others, the divestment of "commodity" functions makes it possible to concentrate on "strategic" systems. One also hears that outsourcing is preferable because contractors offer technical expertise that the firm can't support.

Was there a way to validate the merits of these explanations?

The search

If outsourcing is indeed done for reasons of strategic fit, to realize lower costs, take advantage of specialization of vendors or overcome the unavailability of technical expertise, then outsourcing should be randomly distributed throughout the Fortune 1,000. Its incidence would be found in corporations without regard to size, industry, assets, profitability or growth, as each corporation finds the benefits that satisfy its needs.

Statistical analysis could show whether outsourcing is a random, evenly spread phenomenon or one that is clustered around some causal connection. To examine that proposition, I asked a librarian to assemble a list of companies frequently mentioned in the trade press for their outsourcing actions. With this list, I searched in my productivity database (which includes data about operating performance of U.S. corporations as well as their IT budgets). I then ran many statistical tests to determine if there were discernible unique characteristics among corporations that chose to outsource most of their IT functions.

I found that outsourcing was not a random phenomenon. The most striking analysis displayed the Economic Value-Added (EVA), which is after-tax profits minus compensation to shareholders for equity capital. For each corporation that outsourced most of its IT budget, I listed EVA values for one, two and three years prior to its awarding a major outsourcing contract (see chart below left).

Corporations that outsourced heavily were economic losers heading into the outsourcing act. I couldn't find any corporation with a consistently large EVA and rising employment that was outsourced despite all of the claims about "synergy" or "advantages of getting rid of commodity work." The losers were casting off IT because they were already shrinking their firm (see chart below right).

If outsourcing truly had all of the advertised advantages, economically healthy companies would use it because they were unable to absorb a sufficient number of computer people into their expanding businesses. The winners would also be the most anxious to secure ready-made technical expertise so that they could concentrate on their core competencies. I couldn't find any.

The implications

Outsourcing is in reality only one aspect of a currently popular downsizing trend among troubled corporations. It is executed under another label, just as re-engineering is usually a euphemism for cutbacks. It just happens that the IT community has consistently ranked in surveys as one of the least admired corporate functions. IT therefore becomes an attractive target when there is a quota on how many bodies must leave.

Cutting staff, divesting businesses and getting rid of centuries of accumulated know-how seems to be a prevailing compulsion among large firms seeking to improve profitability by shrinking their size.

One could say that outsourcing has many of the attributes of anorexia nervosa. Anorexics have a distorted self-image that makes them feel fat even when they're emaciated. Refusal to eat and low self-esteem along with emphatic denial of the problem characterize most anorexics. Similarly, executives in companies with poor financial performance seem to concentrate on downsizing as the preferred method for restoring competitiveness.

I am in favor of outsourcing to take advantage of somebody else's capacity to accumulate know-how faster than if it remains homegrown. But it shouldn't be applied as an emetic. I will be encouraged about the prospects for outsourcing services when I get a large list of prosperous and growing organizations that have picked this option as a way to enhance their mastery of information management. ■

Strassmann has served as chief information officer at major U.S. corporations and the U.S. Department of Defense since 1961. His Internet address is paul@strassmann.com. His World Wide Web page address is http://www/strassmann.com.

Economic Value-Added (EVA) prior to outsourcing

Company	Contract awarded	Prior year	Prior two years	Prior three years
CSX	1994	($693M)	($943M)	($1.16B)
Delta Air Lines	1994	($1.15B)	($1.24B)	($1.08B)
Eastman Kodak	1991	($778M)	($572M)	$57M
General Dynamics	1994	$398M	$66M	($928M)
General Motors	1985	($776M)	($442M)	$1.37B
Halliburton	1994	($354M)	($170M)	($497M)
McDonnell Douglas	1994	($110M)	$106M	($308M)
Polaroid	1995	$3M	$44M	($22M)
Scott Paper	1994	($481M)	($269M)	($520M)
Southern Pacific	1993	($140M)	($456M)	($241M)
Unisys	1995	($472M)	($818M)	($1.64B)
US Air	1994	($621M)	($954M)	($1.01B)
Xerox	1994	($1.27B)	($1.81B)	($725M)
TOTAL NEGATIVE EVA		($6.44B)	($7.45B)	($6.70B)

(NEGATIVE NUMBERS ARE IN PARENTHESES)

Corporate layoffs

Company	Employees 1991	Employees 1994	% change 1991-94
CSX	49,883	46,747	-6.3%
Delta Air Lines	66,512	65,596	-1.4%
Eastman Kodak	133,200	96,300	-27.7%
General Dynamics	80,600	25,600	-68.2%
General Motors	756,300	692,800	-8.4%
Halliburton	73,400	57,200	-22.1%
McDonnell Douglas	109,123	65,760	-39.7%
Polaroid	12,003	11,115	-7.4%
Scott Paper	29,100	15,900	-45.4%
Southern Pacific	23,396	18,010	-23.0%
Unisys	60,300	46,300	-23.2%
US Air	48,700	43,600	-10.5%
Xerox	100,900	87,600	-13.2%
TOTAL	1,543,417	1,272,528	-17.6%

The Results

Computerworld congratulates in the 1995 IS Brand PC Software

IS Brand Preference Study on PC Software

Spreadsheet
Windows-based

Best Technology	Microsoft Corp.
Best Price/Performance	Microsoft Corp.
Best Service Support	Microsoft Corp.
Best Documentation	Microsoft Corp.
Prefer to do Business With	Microsoft Corp.

Word Processing
Windows-based

Best Technology	Microsoft Corp.
Best Price/Performance	Microsoft Corp.
Best Service Support	Microsoft Corp.
Best Documentation	Microsoft Corp.
Prefer to do Business With	Microsoft Corp.

Software Suites
Windows-based

Best Technology	Microsoft Corp.
Best Price/Performance	Microsoft Corp.
Best Service Support	Microsoft Corp.
Best Documentation	Microsoft Corp.
Prefer to do Business With	Microsoft Corp.

Desktop Publishing
Windows-based

Best Technology	Adobe Systems, Inc.
Best Price/Performance	Adobe Systems, Inc.
Best Service Support	Adobe Systems, Inc.
Best Documentation	Adobe Systems, Inc.
Prefer to do Business With	Adobe Systems, Inc.

Draw & Illustration Graphics
Windows-based

Best Technology	Corel Systems
Best Price/Performance	Corel Systems
Best Service Support	Corel Systems
Best Documentation	Corel Systems
Prefer to do Business With	Corel Systems

Presentation Graphics
Windows-based

Best Technology	Microsoft Corp.
Best Price/Performance	Microsoft Corp.
Best Service Support	Microsoft Corp.
Best Documentation	Microsoft Corp.
Prefer to do Business With	Microsoft Corp.

Database Management Systems
Windows-based

Best Technology	Microsoft Corp.
Best Price/Performance	Microsoft Corp.
Best Service Support	Microsoft Corp.
Best Documentation	Microsoft Corp.
Prefer to do Business With	Microsoft Corp.

CASE
Windows-based

Best Technology	Micro Focus, Inc.
Best Price/Performance	Micro Focus, Inc.
Best Service Support	Micro Focus, Inc.
Best Documentation	Micro Focus, Inc.
Prefer to do Business With	Micro Focus, Inc.

Anti-virus
Windows-based

Best Technology	Symantec Corp.
Best Price/Performance	Symantec Corp.
Best Service Support	Symantec Corp.
Best Documentation	Symantec Corp.
Prefer to do Business With	Symantec Corp.

Security
Windows-based

Best Technology	Symantec Corp.
Best Price/Performance	Symantec Corp.
Best Service Support	Symantec Corp.
Best Documentation	Symantec Corp.
Prefer to do Business With	Symantec Corp.

Desktop Publishing
Mac/OS-based

Best Technology	Adobe Systems, Inc.
Best Price/Performance	Adobe Systems, Inc.
Best Service Support	Adobe Systems, Inc.
Best Documentation	Adobe Systems, Inc.
Prefer to do Business With	Adobe Systems, Inc.

Draw & Illustration Graphics
Mac/OS-based

Best Technology	Adobe Systems, Inc.
Best Price/Performance	Adobe Systems, Inc.
Best Service Support	Adobe Systems, Inc.
Best Documentation	Adobe Systems, Inc.
Prefer to do Business With	Adobe Systems, Inc.

Presentation Graphics
Mac/OS-based

Best Technology	Microsoft Corp.
Best Price/Performance	Microsoft Corp.
Best Service Support	Microsoft Corp.
Best Documentation	Microsoft Corp.
Prefer to do Business With	Microsoft Corp.

Database Management Systems
Mac/OS-based

Best Technology	Oracle Corp.
Best Price/Performance	Microsoft Corp.
Best Service Support	Microsoft Corp.
Best Documentation	Microsoft Corp.
Prefer to do Business With	Microsoft Corp.

Word Processing
Mac/OS-based

Best Technology	Microsoft Corp.
Best Price/Performance	Microsoft Corp.
Best Service Support	Microsoft Corp.
Best Documentation	Microsoft Corp.
Prefer to do Business With	Microsoft Corp.

Spreadsheet
Mac/OS-based

Best Technology	Microsoft Corp.
Best Price/Performance	Microsoft Corp.
Best Service Support	Microsoft Corp.
Best Documentation	Microsoft Corp.
Prefer to do Business With	Microsoft Corp.

Are In . . .

these top ranking companies Preference Studies on and PC Hardware

IS Brand Preference Study on PC Hardware

Desktop 486 PCs

Best Technology	Compaq Computer Corp.
Best Price/Performance	Gateway 2000
Best Service Support	IBM
Best Documentation	IBM
Prefer to do Business With	Compaq Computer Corp.

Pentium PCs

Best Technology	Compaq Computer Corp.
Best Price/Performance	Gateway 200
Best Service Support	IBM
Best Documentation	IBM
Prefer to do Business With	Compaq Computer Corp.

Workstations

Best Technology	IBM
Best Price/Performance	IBM
Best Service Support	IBM
Best Documentation	IBM
Prefer to do Business With	IBM

Monitors - 15" Intel Based

Best Technology	NEC
Best Price/Performance	NEC
Best Service Support	IBM
Best Documentation	IBM
Prefer to do Business With	IBM

Monitors - 17" Intel Based

Best Technology	NEC
Best Price/Performance	NEC
Best Service Support	IBM
Best Documentation	IBM
Prefer to do Business With	NEC

Monitors - 21" Intel Based

Best Technology	NEC
Best Price/Performance	NEC
Best Service Support	IBM
Best Documentation	NEC
Prefer to do Business With	NEC

Monochrome Notebooks

Best Technology	IBM
Best Price/Performance	Dell Computer Corp.
Best Service Support	IBM
Best Documentation	IBM
Prefer to do Business With	IBM

Color Notebooks

Best Technology	IBM
Best Price/Performance	Dell Computer Corp.
Best Service Support	IBM
Best Documentation	IBM
Prefer to do Business With	IBM

Subnotebooks

Best Technology	IBM
Best Price/Performance	Compaq Computer Corp.
Best Service Support	IBM
Best Documentation	IBM
Prefer to do Business With	IBM

Portable Modems

Best Technology	Hayes Microcomputer Products, Inc.
Best Price/Performance	U.S. Robotics
Best Service Support	Hayes Microcomputer Products, Inc.
Best Documentation	Hayes Microcomputer Products, Inc.
Prefer to do Business With	Hayes Microcomputer Products, Inc.

Portable Printers

Best Technology	Hewlett-Packard Co.
Best Price/Performance	Hewlett-Packard Co.
Best Service Support	Hewlett-Packard Co.
Best Documentation	Hewlett-Packard Co.
Prefer to do Business With	Hewlett-Packard Co.

External Adapters

Best Technology	Xircom, Inc.
Best Price/Performance	Xircom, Inc.
Best Service Support	Xircom, Inc.
Best Documentation	Xircom, Inc.
Prefer to do Business With	Xircom, Inc.

Docking Stations/Expansion Bases

Best Technology	Compaq Computer Corp.
Best Price/Performance	Compaq Computer Corp.
Best Service Support	IBM
Best Documentation	IBM
Prefer to do Business With	Compaq Computer Corp.

The 1995 IS Brand Preference Studies on PC Software and PC Hardware were conducted among Computerworld subscribers to determine which brands of products are preferred among information systems professionals.

A brochure on each study is available. Contact your Computerworld sales representative for a copy or call Patty White at 800-343-6474 ext. 169.

COMPUTERWORLD

The Newspaper of IS

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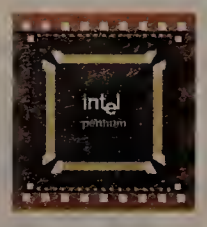

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The super-quick Pentium™ processor is designed specifically for notebooks and is engineered to perform 91% faster than 75MHz Intel DX4 processors.

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CD-ROM to Go:
The power of multimedia is all packed up and ready to go. The Satellite Pro™ 400CDT comes with an integrated, modular Quad-Speed CD-ROM drive that you can swap with the floppy drive in seconds†. Or plug in the floppy drive externally and use both.

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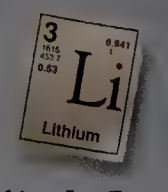

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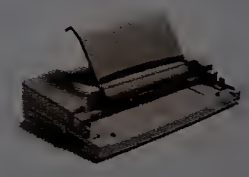
Toshiba's long-life Lithium Ion battery provides many hours of power while you travel.



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Now you only need one computer. The new, optional Enhanced Port Replicator provides two Type III PC Card slots, and allows one-step connection to your desktop environment.

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A built-in power supply means you don't have to carry a bulky external AC adapter. This slim power cord is all you need.

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Calendar

SEPT. 11 - OCT. 4

MANAGEMENT

The Knowledge Imperative Symposium: Using Knowledge to Compete. Houston, **Sept. 11-13** — Sponsored by Arthur Andersen and The American Productivity & Quality Center (APQC). Sessions include "Perspectives on Knowledge Management and Learning," "Doing Battle in the Knowledge Revolution," "The Knowledge Management Model" and "Waking the Sleeping Giant: Tapping into Your Organization's Knowledge." Fees: $1,300 for nonmembers, $1,200 for APQC/International Benchmarking Clearinghouse members, Arthur Andersen employees and clients and government/nonprofit employees. Contact: APQC Knowledge Imperative Symposium, Houston, Texas (800) 366-9606.

Second Annual Virtual Office Conference: Making the Concept a Reality. Miami, **Sept. 14-15** — Seminars include "Achieving Competitive Advantage Through the Virtual Office and a Decentralized Workforce," "Organizing an Alternative Workplace Program," "Developing Comprehensive Company Policies for Off-Site and Decentralized Work Programs," "Quantifying and Measuring the Success of Alternative Workplace Programs" and "Examining the Tools that Maximize Connectivity and Responsiveness in a Decentralized Environment." Contact: Institute for International Research, Inc., New York, N.Y. (800) 345-8016.

Human Resource Management Services/Expo '95: The National Human Resources Information Technology Exposition and Conference. San Jose, Calif., **Sept. 18-20** — Topics: human resources strategies and tactics, client/server applications, payroll and retirement systems, project management and human resources implementation, benefits and business process re-engineering. Contact: Dave Code, Blenheim NDN, Inc., Mountain View, Calif. (800) 232-3976.

The Second Annual National Business Process Re-engineering (NBPR) Conference. Arlington, Va., **Sept. 18-21** — Free conference will discuss how to identify and deal with the effects of re-engineering on employees and organizations; benefits, drawbacks and effective use of rapidly changing business process re-engineering tools to support re-engineering efforts; and the latest innovative technologies and capabilities, such as Internet and document management used to support re-engineering activities. Contact: NBPR '95, Falls Church, Va. (703) 761-0646.

Quality Function Deployment. Phoenix, **Sept. 19** — Also offered **Oct. 25** in Dearborn, Mich. Fees: $895 per person; $795 each for groups of three to five people; $745 each for groups of six to 11 people. Contact: Management Roundtable, Inc., Boston, Mass. (617) 232-8080.

The Information Technology Outsourcing Institute: Designing, Negotiating and Implementing Deals. San Francisco, **Sept. 20-21** — Seminars include "Developing Airtight Request for Proposals: Strategies of the Most Successful Purchasers," "Objective and Subjective Metrics for Evaluating Vendor Proposals" and "How to Obtain Competitive Pricing Throughout the Terms of the Deal." Contact: BDA, Inc., Washington (800) 394-9390.

IACIS '95. Toronto, **Sept. 28-30** — Theme: Information systems for the future. Contact: International Association for Computer Information Systems, Stillwater, Okla. (405) 744-5204.

The 1995 Computer Training and Support Conference. Orlando, Fla., **Oct. 1-4** — Sessions include "Emerging Technologies: Looking in the Crystal Ball," "The Next Wave: Technologies for the Mobile Professional," "Virus and Network Security Policies That Work," "Software Licensing" and "JAD, RAID and Software Development Methodologies." Keynote speakers: David Prentice, president of Learning Corp., on "Super-Charged Customer Service: A Personal Statement of Excellence"; Sue Miller Hurst, director of the Starshine Foundation, on "The Learning Edge"; and Elliot Masie, president of the Masie Center, on "Why Computer Users Say the Strangest Things." Fee: $895. Contact: Soft Bank Institute, Medford, Mass. (617) 393-3344.

INDUSTRIES

Manufacturing Execution Systems Roundtable 4. Chicago, **Sept. 13-14** — Focus: Improving manufacturing productivity and quality with integrated manufacturing execution systems. Contact: Manufacturing Execution Systems Association, Pittsburgh, Pa. (412) 781-9511.

Cable Telephony '95. Denver, **Sept. 19-20** — Topics: "The Business Case for Cable Telephony," "Cable Telephony Prescriptions for Success," "Making it Work: Overcoming Technical and Operational Hurdles" and "High-speed Data Service Deployment and Wireless Cable Telephony Delivery." Fee: $985. Contact: TeleStrategies, Inc., McLean, Va. (703) 734-7050.

1995 NASIRE Annual Conference. San Antonio, **Sept. 25-27** — Theme: "Founding the Information Republic: Meeting Citizens' Needs. Fees: $295 for government employees, $395 for National Association of State Information Resource Executives (NASIRE) members, $595 for corporate nonmembers, $100 for guests. Contact: NASIRE, Lexington, Ky. (606) 231-1905.

USER GROUPS

The International Function Point Users Group (IFPUG) 1995 Fall Conference. Toronto, **Sept. 18-22** — The conference will feature a variety of software metrics and project management topics, a training course on function point analysis, project estimating, management software measurement and quality and process improvement programs. Contact: David Longstreet, IFPUG, Westville, Ohio (614) 895-7130.

Unix Expo. New York, **Sept. 19-21** — Sponsored by the New York LAN Association. Contact: Laura McQuaid, Blenheim Group, Fort Lee, N.J. (800) 829-3976, ext. 384.

XDB Sixth Annual International User Conference. Baltimore, **Sept. 19-22** — Fee: $675. Contact: Connie Handen, XDB Systems, Columbia, Md. (800) 488-4948.

SECURITY

Establishing Security and Combating Financial Cybercrimes on the Information Superhighway. Chicago, **Sept. 13-14** — Topics include security requirements for the Internet, threats to financial security in cyberspace and tools for securing electronic commerce. Contact: Ralph Gaillard Jr., International Communications for Management, Chicago, Ill. (312) 540-3845.

VB '95: Virus Bulletin's Fifth Annual International Conference. Boston, **Sept. 20-22** — Topics include introductory session on computer viruses, problems encountered by corporate security managers and what the technology will look like at the turn of the century. Contact: Virus Bulletin Ltd., Ridgefield, Conn. (203) 431-8720.

TECHNOLOGIES

Client/Server Economics Summit. Washington, **Sept. 18-20** — Topics include distributed systems support, advantages of deploying a request-tracking system, applying advanced systems and profiting from emerging technology, controlling the cost of migrating to client/server, networking challenges of client/server and deploying mission-critical systems in a client/server setting. Fee: $1,195. Contact: Mary Clare Bennett, Client/Server Economics Summit Registration, San Francisco, Calif. (415) 905-2267.

Online Developers II. San Francisco, **Sept. 19-21** — Sessions include "How to Position Your Content in the Post-Web World," "Strategies for Cross-Marketing Your Online Product," "How to Negotiate the Best Deal for Your Content" and "Product Design and Development from the Experts." Contact: Jupiter Communications, New York, N.Y. (212) 941-9252.

Stored Value Cards: Implementing State-of-the-art Electronic Cash Applications. Washington, **Sept. 21-22** — Sessions include "Taking Immediate Advantage of 21st Century Smart Card Opportunities," "Visa Stored Value Cards: Capitalizing on the New Global Currency," "Which Comes First — Commerce or Finance?" and "Moving Beyond the 'New Toy' Technologies: How to Attract New Customers with Benefit-Packed Stored Value Card Systems." Contact: The Center for Business Intelligence, Burlington, Mass. (800) 767-9499.

Calendar announcements should be submitted at least six weeks prior to the event and include the title of the event, dates, location, theme or focus, keynote or major speakers, principal topics and a contact person, organization and phone number.

SEND ANNOUNCEMENTS TO:

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The Newspaper of Information Systems Management

COMPUTERWORLD

Vaporware tactics elicit mixed views

By Stuart J. Johnson

Vaporware, software announced long before its delivery, does not appear to be hazardous to user health, according to an exclusive *Computerworld* survey.

The survey of 100 information systems professionals last week revealed that 80% of those polled said preannouncements of product plans are useful for decision-making purposes. Yet 85% agreed that such early information from major vendors such as IBM and Microsoft Corp. can have a market-freezing effect for smaller competitors (see chart, page 147).

And while federal Judge Stanley Sporkin has made a major issue about vaporware from Microsoft, which he contends has a harmful effect on the market, users don't seem to care.

"The earlier I know [what's coming], the better, but we still buy for today's needs knowing that things will change tomorrow," said Jerry Clement, a staff technician in the legal technical document group at United Airlines in South San Francisco.

However, users are absolutely more interested in near-term product deliveries than faraway ones. Fully 91% of those surveyed preferred to hear about product fea-

Vaporware, *page 147*

User Pulse

Do you rely on preannouncements from major software and hardware providers to help plan future technology decisions?

Don't know: 8%
BASE: 100 IS PROFESSIONALS

Reality check

Full benefit of Plug and Play technology is two years away

By Jaikumar Vijayan and Michael Fitzgerald

Plug and Play – one of the most highly anticipated features of Windows 95 – will be more promise than reality when the operating system ships later this year, several vendors, including Microsoft Corp., confirmed last week.

Older or legacy PCs will be unable to take full advantage of Plug and Play, which is supposed to give users hassle-free, automatic peripheral device detection and configuration. And corporate users will face a comprehensive overhaul or upgrade of their existing systems in order to use it.

There is "going to be a disconnect between people's pie-in-the-sky expectations for Plug and Play" and reality, said Scot Stelter, a product manager at Adaptec, Inc., a leading manufacturer of SCSI devices in Milpitas, Calif.

In fact, it could be at least two years before Windows 95 users can count on full Plug and Play capabilities with any device or peripheral they buy.

Several users contacted last week were not up in arms about the problem but said it was a concern.

"The Plug and Play feature is a real advantage for Windows 95, [and it] certainly would be viewed as a downside if a card didn't work with the spec," said Glenn Jurmann, a technical specialist at Baxter Healthcare Corp. in Deerfield, Ill. Still, Jurmann said that while "Plug and Play would make life a lot easier," other issues with Windows 95 were more significant to Baxter.

Even users with Intel Corp. Pentium-based sys-

Plug and Play, *page 14*

What Plug and Play is supposed to do:

- Identify installed devices such as peripherals
- Determine device resource requirements
- Note configuration changes
- Load device drivers

IS taps temp execs

By Jeffe King

Are you an experienced information systems executive who has been re-engineered out of a job years before you planned to retire?

Does the idea of earning $125 an hour working exclusively on high-level strategic IS projects appeal to you?

If you answered yes to either question, you may want to consider hiring yourself out as an interim IS executive. A growing number of companies are looking to rent rather than permanently employ experienced, executive-level IS professionals.

The current $1 billion U.S. market for temporary technical

Temps execs, *page 16*

Timely Techies

High-tech executives account for roughly 20% of all temporary workers placed by recruiting firms, according to Kennedy Publications. And the $1 billion market for temp executives is growing by 25% annually.

Distributed computing

IBM/Cisco deal to ease legacy moves

By Michael Fitzgerald and Laura DiDio

In a major advance for IBM mainframe users, Cisco Systems, Inc. will announce in mid-May that it is embedding IBM's Advanced Peer-to-Peer Networking functionality into all of Cisco's routers, sources said last week.

Cisco support for APPN will aid large corporations trying to migrate from the legacy SNA environment to client/server platforms.

APPN, in conjunction with the LU6.2 networking protocol, is IBM's avenue for connecting SNA systems and LANs. By pairing APPN support into Cisco's market-leading routers, IBM is effectively giving SNA users a kind of universal language for distributed computing.

Works for users

IBM and Cisco officials declined to comment on the announcement. But users gave news of the move an initial thumbs-up.

"Depending on how they integrate it with [IBM's] NetView product so you gain the ability to view the total network, that could come in quite

IBM/Cisco, *page 18*

Client/server software heads for MVS territory

By Rosemary Cafasso

IBM's MVS operating system is one old dog that's about to learn some new client/server tricks.

Strange as it may seem, the venerable mainframe operating system is poised to become a key client/server applications platform.

Users and analysts last week attributed the increasing MVS activity to the maturing of the client/server industry.

Some information systems executives also cited a desire to leverage their hardware and software investments, in addition to acknowledging lingering doubts about the

MVS, *page 147*

Newspaper

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In Depth

Not afraid to flame

Women IS pros go on-line for business info, to network and to recruit staff

By Virginia Shea

You've read the stories. Men in cyberspace outnumber women 6-to-1. Women are stalked by cybercreeps, intimidated by flamers. Really, it's a wonder they bother to log on at all.

Do those images have anything to do with reality? Sure, women are outnumbered on-line (although recent studies show the actual ratio of men to women is now about 2-to-1), just as they are in most areas of technology.

But the women who've found their way into cyberspace are hardly standing on the sidelines.

The E-mail lifeline

The information systems women we spoke with depend on the Internet for business. "I've reached the point where if I don't have E-mail and if I can't get into the Web, I'm in really bad shape," says Liz Staley, desktop support manager at Cisco Systems, Inc. in San Jose, Calif. She's not alone: "The [other] women who work in IS with me are all into E-mail, they're all on the Web, and they're really upset when they can't get into their E-mail."

Staley won't work with vendors who don't have electronic mail. "I require all my vendors to have E-mail access, so I can ... send notes and forward their responses" to others at Cisco, she says. "E-mail is an essential business tool for me."

She counts on the World Wide Web to get information, bug fixes and software updates for

Not afraid to flame, *page 82*

CINDY CHARLES

● 'Electronic discussions have a distinct advantage for women,' says Marina Mann, IS chief at the Electric Power Research Institute. Gender isn't an issue.

Not afraid to flame

CONTINUED FROM PAGE 81

the in-house users she supports.

Say Toshiba Corp., one of Staley's hardware vendors, comes out with a new computer and her users need a driver that works with the machine. Staley can download an updated driver from a Web site the same day. She doesn't have to wait for someone to mail her a diskette.

Staley finds the Microsoft Corp. (http://www.microsoft.com/) and Hewlett-Packard Co. (http://www.hp.com/) Web sites particularly useful.

Plugged in

At the Electric Power Research Institute (EPRI), Marina Mann has set up and scoured the organization's on-line service for information to do her job.

Five years ago, Mann, director of advanced information technology at EPRI, helped create Eprinet, an on-line service. Today, that service exists as a private network overlay on the Internet. A version also runs off the group's Internet server, which gets 3,300 hits per day.

The service has information on EPRI's research program, lets the institute hold bulletin board discussions and gets feedback from discussion groups on the merits/demerits of upcoming research.

Mann is deeply involved in discussion groups about emerging standards for telecommunications throughout the utilities industry. These discussions with customers will help frame her department's goals for the next several years.

The art of networking

Women are going on-line to network, too. Maddi Hausmann Sojourner, staff technical writer at Centigram Communications in San Jose, Calif., and former moderator of the popular Usenet newsgroup rec.humor.funny, was offered a job over the Internet. "It was entirely based on my 'net persona that they contacted me," she says. She wasn't job hunting at the time. "I've networked on the 'net, either socially or business-wise, but it's always been kind of serendipitous."

But a lot of people — and companies — don't leave their on-line networking to chance. "We do a lot of recruiting through the network," Staley says. "I'm looking for a Microsoft Windows NT candidate right now. Most of the candidates we're seeing, we're getting through doing job searches on the 'net."

On-line resources for job hunters are expanding almost daily. In addition to local job listings, the Web offers a national Online Career Center (http://www.occ.com/occ/) and a host of other services that can be reached through Yahoo (http://www.yahoo.com/), a search service of hundreds of Web sites.

Sexless in cyberspace

The IS people we spoke with lauded a certain benefit of 'net access for women: Your femaleness is less visible — invisible, in fact, if you go only by your initials. In a sexist world, that can be helpful.

"Electronic discussions have a distinct advantage for women," Mann says. "In many environments, a woman's voice can be automatically tuned out by the males in the room.... When you're speaking in a position of authority, and it's an intense issue for the corporation and you have an older male audience listening, you have the ingredients for failure. And you have to be very realistic about that."

That's not an issue on-line, Mann says. "I believe cyberspace discussions are valued for their content." ■

Shea is author of *Netiquette* (Albion Books, 1994) and a freelance writer in Sunnyvale, Calif.

WOMEN'S WIRE

A listing of women-specific forums on the World Wide Web

http://www.mit.edu:8001/people/sorokin/women/index.html
Women in computer science and engineering

http://www.ksu.edu/~dangle
Women in technology

http://www.research.digital.com/nsl/hopper/info.html
Grace Hopper's celebration of women in computing

http://www.witi.com/
International network of women in technology

http://www.witi.com/links/prof.html#computers
Various hot links to women in computing resources

http://www.halcyon.com/monih/awc.html
Association for Women in Computing home page

FLAME WARS

In a recent survey by Interactive Publishing Alert of 300 women who regularly use on-line services, respondents favored get-tough policies on flaming.

Are women too sensitive to participate in nasty flame wars? Paula Breeden, a software engineer at Icot Corp. in Palo Alto, Calif., certainly isn't. "I'm extremely difficult to intimidate, and I'm likely to give as good as I get, although I think my manners are too good to allow me to launch a major flame attack," she says.

Tech writer Maddi Hausmann Sojourner is someone else who's never backed away from a flame. "I was brought up that if somebody got in my faee, I told them to get out of my face," she says.

In a world as diverse as cyberspace, flames are probably inevitable, says Dale Walker, co-founder of the Wombat Internet Guild, an Internet access provider in Palo Alto, Calif. "It's much more likely on-line that you're going to run into someone who pushes your buttons than in real life, where you socialize with people who are like you," she says. "In a way, that's one of the nice things about cyberspace — that you get this range of experiences."

the UGLY side

PORNOGRAPHY AND CREEPS

The IS women *Computerworld* spoke with came across pornography here and there on the Internet. But they're resigned to its existence.

"I think that the Internet is just a reflection of our cities and our country, and I don't see anything different there than female executives face every day," says Marina Mann, IS chief at the Electric Power Research Institute. "We travel all over the world, we come into cities at midnight, we're in taxicabs at 5:00 in the morning, we pass pornographic stores on the way to the hotel. I don't think most of my peers or colleagues or friends would find anything on the Internet a problem."

And what about on-line harassment, those cybercreeps and 'net stalkers? While nobody claims that 'net stalking never happens, most women don't see it as a major issue. Technical writer Maddi Hausmann Sojourner tells of one man who sent her an unsolicited personal ad by E-mail. "The message was very forward," she says. "Maybe in one of the underground papers it would be a little more appropriate, where people are really out there with their sexual turn-ons, but I thought, 'This is a little creepy for E-mail.'"

Sojourner told him to cut it out.

About six months later, he wrote again. Sojourner responded that because she couldn't trust him to leave her alone, she was going to keep sending *him* E-mail. She also threatened to publish his name on Usenet if she found out he was bothering other women. It worked — she hasn't heard from the man in years.

Sojourner says the incident stands out in her mind because it's the only one, adding that she's experienced more discrimination in person than on-line.

In live "chat" areas, on the other hand, messages ranging from "age/sex check?" to outright propositions are fairly common. Some women avoid them by staying out of chat groups. "If I'm going to do purposeless activity, I'd rather do it off-line," says Dale Walker of the Wombat Internet Guild. Walker simply doesn't see the point of chat.

Others find the messages only a minor annoyance. "I don't really consider them threatening — they're mostly sort of hopeful, maybe even wistful," says Paula Breeden, a software engineer at Icot. — *Virginia Shea*

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• Update on Diversity	
• Applicant Tracking	
9:15 a.m. - 12:10 p.m.	How To Pick The Right People
12:15 p.m. - 2:00 p.m.	The Top 10 Trends Affecting Information Systems Careers
2:10 p.m. - 3:05 p.m.	Repeat of Concurrent Sessions
3:20 p.m. - 5:00 p.m.	Town Hall Forum
5:00 p.m.	Program ends

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Dr. William Swan
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Luncheon/Keynote Address
Paul Gillin, Executive Editor, Computerworld
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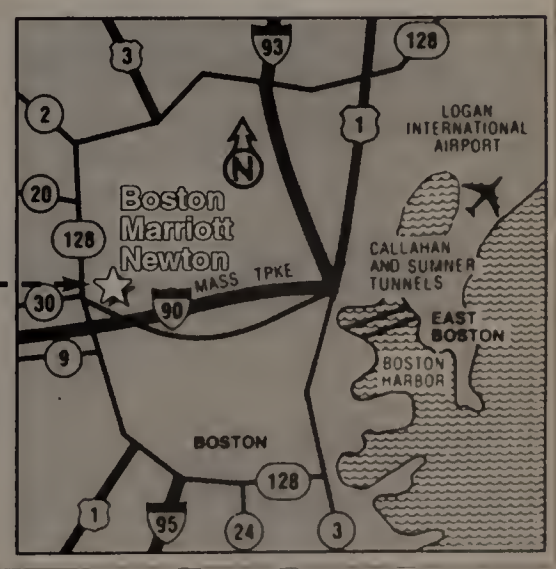

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WINDOWS 95 training

By Linda Wilson

An obvious question rises above the hype and hoopla swirling around the long-awaited release of Microsoft Corp.'s Windows 95 this week: What will it take to get up to speed?

Whether you're training to become an application developer, systems engineer or just to gain peripheral knowledge, expect to invest some time becoming familiar with the new interface. "You might as well forget what you know about Windows because this is a whole new ball game," says Greg Scott, manager of information systems for the college of business at Oregon State University in Corvallis.

Scott, a beta user, plans to complete the rollout of Windows 95 to 300 workstations by mid-August. Similarly, Jim Crawford, senior systems engineer at Electronic Data Systems Corp. in Austin, Texas, also a beta user, says, "Expect some frustration initially as you go through the exploration. It took me three weeks before I liked it and a month before I liked it better [than Windows 3.1]."

Besides the user interface, you'll spend time learning how Windows 95 handles system configuration and network administration. "This is smoother and easier to use from a systems administration and networking standpoint, but it's different, and it takes some training," Crawford says. He should know. He'll spend the bulk of his time training EDS IS staffers once Windows 95 is officially released. He's developed a one-day class to train his peers.

The total time you'll devote to learning depends on how deep into Windows 95 you want to wade. In general, you can expect to spend one day in a classroom if your goal is to learn the basics about the interface and a week if your goal is to become certified as a systems engineer or application developer. In addition to class time, you'll probably spend several weeks playing around with it.

"It depends on whether you want to focus on one particular point or if you want to know the whole works," Crawford says. For example, developers at EDS who create World Wide Web sites on the Internet for EDS customers will probably only want to learn how Windows 95 handles TCP/IP, the primary data networking protocol on the Internet, he says. But EDS employees who answer end-user questions will want to know a little bit about everything.

What it will cost

The cost for formal classroom training ranges from about $300 to nearly $2,000. Training is available through more than 800 Microsoft-authorized technical education centers worldwide. Training vendors plan to begin offering classes in the third and fourth quarters of 1995.

But if you don't like formal classes, there are various ways to teach yourself, including books, videos, interactive computer sessions, televised programming delivered via satellite on Microsoft TV and, for the first time, on-line training.

One means of training that's captured a lot of attention is Microsoft's Online Institute, operating via The Microsoft Network. Access to the network is loaded into each copy of Windows 95. The Online Institute "campus" comprises a bookstore, classroom buildings, guidance center, student union and library. Dozens of commercial training vendors will offer courses through the Online Institute.

One such vendor is CGI Systems, Inc., with U.S. headquarters in Berwyn, Pa. CGI plans to offer both home-study materials and an electronic library. Professors will answer students' questions via weekly chat sessions and electronic mail. Six-week access to CGI's on-line offering costs $500.

Formal training, however, won't replace hands-on experimentation. Dale Ross, an electronics specialist at L & H Technologies, Inc. in Charlotte, N.C., and a beta user who taught himself, says, "Any competent professional is going to need to do this before they throw it at a whole group of users." ■

Wilson is a freelance writer in Glen Ellyn, Ill.

Microsoft resources

- Class locations: **(800) 765-7768**
- Certification: **(800) 636-7544**
- Certification exams: **(800) 755-3926**
- Information about Microsoft's TV classes, offered via satellite on video and cable in select areas: **(800) 597-3200**

TRAIN STOPS

The following firms offer training classes or materials for Windows 95.

AT&T Professional Development Center, Denver (800) 228-0710

CGI Systems, Inc., Berwyn, Pa. (800) 244-3382

ExecuTrain, Alpharetta, Ga. (404) 667-7700

J-3 Learning Corp., Minneapolis (800) 532-7672

Learning Tree International, Reston, Va. (800) 843-8733

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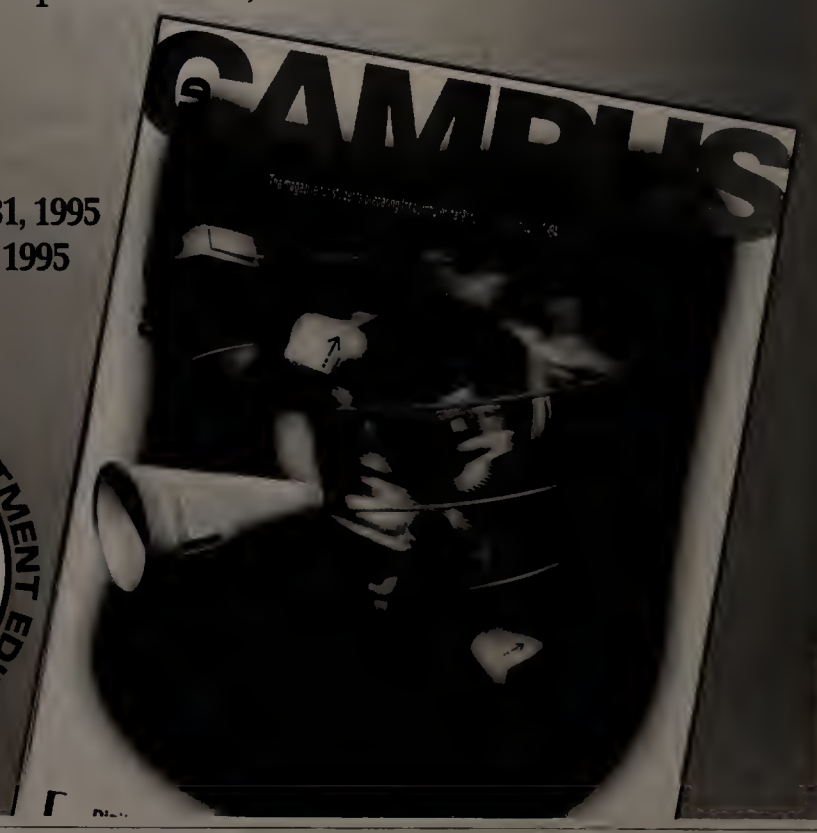

From problem janitor to information mover

Call management systems offer help desks the opportunity to move forward

By Cinda Daly

Changes in the structure and identity of the help desk have been as dramatic as the technology that's passed through them. The profession has coped and made notable strides, especially with the aid of call management systems.

Handling more calls in less time with fewer dispatches, callbacks and people is no small matter. Help desks have become expert problem janitors — they clean up more efficiently than ever before.

But amid the well-chronicled pressures of the help desk lies the chance to distribute relevant, accurate and useful information to users. The goal is to step beyond cleanup into information making and moving.

Currently, information is there but not easily accessible. Disconnected information clutters the desktop window; inexperienced staff offer questionably accurate solutions; data is locked in people's heads.

Tools such as call management systems, knowledge access technologies and packaged knowledge can help gather, sort and electronically move information so it can be accessed enterprisewide by people who need it. The movement requires varying degrees of knowledge engineering — capturing, verifying and building data into the most appropriate tool, determining the optimal distribution mode and managing its release.

If your goal is to create an information hub, start by sharing knowledge tasks and analyzing problems with peers. Each individual can routinely assess user questions and problems encountered. As patterns emerge, ask questions about how to change the process to improve accurate resolution on the first call with intelligent knowledge-based tools, for starters.

Afterward, "engineer" the information so it is easily available for the next person. This can be anything from typing data into the solution field in a call management system to creating a hypermedia video file that demonstrates the answer.

Strange associations

Most call management systems and shrink-wrapped knowledge products have electronic knowledge capabilities embedded in their solution databases.

They offer answers to PC applications and component hardware problems, thereby jump-starting the knowledge foundation. What they don't do is directly associate with the client's unique configuration, operating environment or proprietary applications. This is important to note because it is these environmental factors as a whole, not in isolation, that lead to problem diagnosis and resolution.

Eventually, help desk technologies and knowledge access tools, such as case-based reasoning and adaptive learning engines, will address the association issue. For example, Top of Mind from The Molloy Group is one of the first to do this, establishing the next threshold for knowledge engineering.

Once a knowledge foundation exists, give some of that knowledge to users. Getting people to use it will demand a shift in mind-sets and call flow itself. This will take training and time, but eventually it will reduce the number of calls. Users will be able to solve more problems themselves.

New methods

Today, if users alert you to a problem by telephone, try to introduce opening calls through electronic mail, a standard function in most call management systems. Next, direct information access; show users how to use packaged knowledge and electronic documentation and how to access the call management system knowledge base to research answers to "how-to" questions and simple problems. So significant is this knowledge effort that some organizations have created the role of knowledge engineer. More important is management's commitment to the project, however.

To borrow a phrase from Buckminster Fuller, architect of the geodesic dome, "You can never change things by fighting it; you change things by making it obsolete through superior methodology." Help desk professionals can lead the way. ■

Daly is founding partner of Focus Information Systems, a strategic marketing and technology support consultancy in Atlanta.

What it takes

To move beyond being simple problem solvers, help desk staffs must:

- Assume responsibility for the information, not just for closing the call.
- Set aside time to verify the accuracy of the solutions and type them into the call management system.
- Take a proactive role.

Do you hoard knowledge?

If you find yourself squirreling away information, it's time to quit. For example, do you:

- Jot tech notes on stickies and throw them away when the reason for the note no longer exists.
- Read every technical memo, manual, release note, bulletin board and recite details to perfection *when someone asks.*
- Not have any personal use for electronic knowledge bases; all the data needed is easily recalled from memory.
- Sometimes remember to tell a fellow technician about a recent discovery, especially if it's really esoteric.
- Know just about everything and forget to tell anyone.

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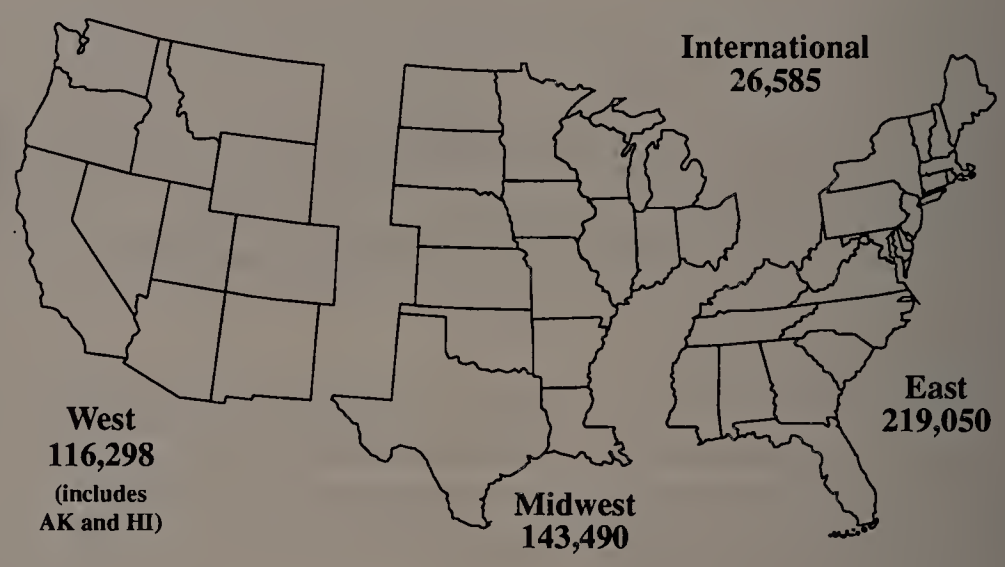

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Pittsburgh prospers

Small start-ups and consulting gigs keep Pittsburgh's technical community in the pink

By Chris Schneider

Pittsburgh's job market was called cautious and conservative by hiring managers last year. This year, they claim it's vibrant and spectacular. Who knows for sure why such mood swings take place, but experts credit the technical community's entrepreneurial spirit.

Carnegie Mellon University alone spawns five to 10 software companies each year, which in turn create about 300 to 400 new jobs locally. "Pittsburgh's on the map in the software industry because Carnegie Mellon has been one of the Top 3 universities in software and hardware design," says Tim Parks, president of the Pittsburgh High-Technology Council.

Transarc Corp., a client/server software firm, is one such spin-off. Its doors opened in 1989. "I started with four people, and we're 250 today," says Alfred Spector, president and chief executive officer. "We're making money, and we expect to keep growing at about 50% per year." This year, Transarc plans to add 40 people.

Another Carnegie offspring, Carnegie Group, Inc., is also increasing its staff about 30% a year, says Alan Lawson, vice president of software delivery. The custom software development firm is hiring for several projects in which C and C++ are among the critical skills.

While the number of very strong, relatively small companies is increasing, filling positions from Pittsburgh's happily employed talent pool is difficult. For example, Spector says he's "moved approximately two-thirds of [the firm's] development community into Pittsburgh."

ANDREW A. WAGNER

Pittsburgh's industrial image: *gone but not forgotten*

Larger counterparts also offer stiff competition.

"The marketplace is spectacular compared to how it was five years ago," says Leslie Finkel, managing director at Source Services Corp., a recruiting firm. For example, Mellon Bank Corp., which has 100 openings, is on the hunt for Unix, LAN and PowerBuilder specialists, says Charlene Alexia, an information systems recruiter at the bank. "People in PowerBuilder areas" are especially hard to find, she says.

On the manufacturing front, Westinghouse Electric Corp. is developing a network control center and help desk to monitor 25,000 networked computers. The company will also replace its file print and messaging infrastructure. "It's a major initiative for us," says Bruce Graham, director of information technology services. Depending on the position, skills include LANs, WANs, TCP/IP, Microsoft Corp.'s BackOffice applications and Windows NT.

Trolling for talent

Not all large companies are hiring permanently. "The growth in this city is not going to come from the Fortune 500 companies, such as Alcoa, U.S. Steel and PPG," Finkel says. "Their solution is to bring in consultants."

Lewis Wheeler, president of Computer People, Inc., agrees. The consulting firm has 60 open projects and is hiring "like crazy," he says.

Despite incredible demand, it's still hard to lure qualified IS talent. "We don't look attractive to these people," Finkel says. "We're not California, and you can't surf at lunch." ■

Schneider is a freelance writer in Austin, Texas.

At a glance

WHERE THE ACTION IS

"The growth in this city is not going to come from the Fortune 500 companies, such as Alcoa, U.S. Steel and PPG. Their solution to staffing IS is to bring in consultants."— Leslie Finkel, managing director, Source Services Corp.

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Source: U.S. Department of Labor, Washington

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Sources: *Pittsburgh Business Times, 1993 Book of Business Lists*, 1995 Pennsylvania Department of Labor & Industry, August 1994

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TECHNICAL SUPPORT CONSULTANT: Norcross, GA. Provide technical support to development personnel. Assist developer with analysis, design & programming problems. Analyze, design, program & maintain infrastructure systems & utilities to support development. Monitor, analyze & recommend enhancements. Exp. must include ADABAS, PREDICT, Natural Security, Complete, CICS, MVS, JCL, and TSO/ISPF. Detailed knowledge of PC to mainframe communications, FTP & AWK programming. Working knowledge of MS Word and MS. EXCEL. 3 yrs. exp. in job offered or as a Computer Consultant. 40 hrs./wk, 9-S Mon-Fri, $7S,000/yr. Send letter/resume to Georgia Dept. of Labor, J.O. # 58875115, 1S3S Atkinson Rd., Lawrenceville, GA 30243-5601 or the nearest Dept of Labor Field Service Office.

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Consultant, Applications Development. Design & develop in-house applications software for Sales & Marketing, Shipping & Inventory Tracking & for Administration & Support departments; install, customize & maintain marketing information systems MSM & SalesTracker for sales support department; software packages; build interfaces to port software between MSM & SalesTracker SupportCenter; analyze marketing potentials for new software products; mathematical modelling & statistical analysis in an IBM AS/400 environment with RPG/400, OS/400, AS/400, & CL/400; generate designs, coding, testing procedures; provide on-site maintenance support including debugging, fine tuning & modifications. $40,000/yr. 40 hrs/wk. M-F. B.S. or equivalent in Computer Sc., or Computer Eng., or Mathematics & 2 yrs. exp. in job offer or as Systems Analyst, Programmer Analyst, or Computer Consultant. Must have proof of legal authority to work permanently in the U.S. Send 2 copies of resume to the IL Dept. of Employment Security, 401 South State St., 3 South, Chicago, IL 60605. ATTN: Leila Jackson. Ref. #V-IL 12792-J. NO CALLS. AN EMPLOYER PAID AD.

Software Engineer to analyze user requirements, identify problem areas, conduct studies to obtain & analyze data, determine & recommend specific solution; design & develop software for MIS design suitable implementation strategies; design, develop, implement & maintain online & batch programs using UNIX, C, HP3000, POWERBUILDER, VPlus & Image; perform systems modeling simulation & analysis; test & debug software, interact with team members, consultants with clients; give technical support. Reqs Bach. or equiv in Comp. Sci., Computer, Electrical or Electronic Engg., 2 yrs. exp. in job offered or 2 yrs. related exp. such as Jr Programmer, Programmer Analyst, Associate Consultant or Project Leeder. Related exp. must include marketing software packages, maintenance of hardware, training & development of client's user-teams, developing projects using Oracle, Ingres, Visual Basic, Clipper, HP3000, PowerBuilder, VPlus & Allbase-SQL. $47,120/yr, 40 hrs/wk O.T as req'd 8a-5p. Send resume to 7310 Woodward Ave., Room 415, Detroit, MI 48202 Ref #127295 "Employer Paid Ad"

Professional Services Consultant for Structured Systems Analysis & Design (SSAD), reengineering, development, integration testing & implementation of complex on-line & batch systems in inventory, manufacturing, financial, banking & other MIS applications; determine & recommend specific systems solutions to clients; function in multi-hardware/multi-software environment including IBM mainframes, UNIX mini-computers & workstations & client-server environments using relational & hierarchical DBMS, CASE & GUI tools & 4GL's: assist in software quality assurance & development of productivity & metric tools for large scale data conversion; participate in technical reviews & new technology evaluations at customer sites; Reqs. Bach. in Comp. Sci., Computer, Electronics or Electrical Engg. Or its foreign equiv., 2 yrs exp in job offered or 2 yrs related exp as Software Engineer, Systems Consultant, Programmer Analyst or Systems Analyst. Related exp must include using SYBASE, CSP, IEF, case tools, windows GUI, DB2/COBOL & UNIX on HP. Travel req'd.; $46,000/yr, 40 hrs/wk OT as req'd 8a-5p. Send resume to 7310 Woodward Ave., Room 415, Detroit, MI 48202. Ref. #127395 "Employer Paid Ad"

Software Engineer: Maintains, develops, administers, and writes appropriate application software using C and PAW for data acquisition and analysis of large scientific data sets (four gigabytes) used for high energy physics experiments in a client-server UNIX environment using SGI IRIX 5.2. Designs, develops, and maintains necessary systems performance diagnostic tools. Assists in conversion of data analysis process from VMS TO UNIX platform. Debugs, develops, and performs modification for PAW applications as required by data acquisition system. Requires Master's degree in Computer Science, Software Engineering, or Physics. Also requires six months experience in the job to be performed or six months experience as a Research Scientist. If experience in related field, entire experience must include writing application software using C and PAW for data acquisition and analysis of large scientific data sets (four gigabytes) used for high energy physics experiments in a client-server UNIX environment using SGI IRIX 5.2. Hours: 9:00 a.m. - 5:00 p.m. 40 hours per week at $23.00 per hour salary. Please send resume to: Roger W. Bassett, Vice President, Software Consulting Inc., 4736 Main Street, #7, Lisle, Illinois 60532.

Systems Analyst. 40 hr/wk from 9a.m. to 5p.m. Salary at $50,000/yr. Job duties to include design, develop, test and implement large database systems using Oracle V 7.0, RDBMS. Convert old systems from Oracle 5.0/6.0 to Oracle V 7.0. Perform Oracle database administration, UNIX System Administration, Network Management using TCP-IP, X-25, X-27, X-32, X-75. Work on high-end HP T500 machines, SEQUENT Machines and DIGITAL-VAX Series Machines. Require B.S. Degree with Computer Science as major and 2 yrs exp. in job offered. Also, experience in job offered must include two yrs exp. in banking applications working with Branch Automation Systems, Front End Development Tools and Interactive Voice Response Systems, ORACLE V 7 and V 6, and working on HPT500 machine. Must have proof of legal authority to work permanently in the U.S. Please send 2 copies of resumes to Illinois Department of Employment Security, 401 South State Street - 3 South, Chicago Illinois 60605 Attention: Brenda Kelly; Reference #V-IL 13297-K. No Calls. An Employer Paid Ad.

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Sr. Software Engineer to analyze systems requirements & Business Area Analysis; implement system analysis & design using Oracle Case tools; integrate Oracle CDE tool set in client/server environment; develop applications with Oracle*Forms, Oracle*Reports, Oracle*DataBrowser, PowerBuilder 3.0a; design databases & develop data models using Oracle*Case tools (Case*Designer,Case*Dictionary, Case*Generator); test & evaluate Oracle New Tools DESIGNER2000, DEVELOPER2000, WORKGROUP2000; enforce James Martin's Information Engineering methodology RAD/IE RAD in application development; evaluate custom software packages like VANTIVE, CASE WONDER, DB Expert, HOLOS,implement Configuration Management & Information Technology standards in Distributed Computing Environment; Reqs. Master's in Comp. Sci. or Comp. Engg., 6 mos exp in job offered or 6 mos related exp such as Systems Engineer or Systems Administrator. Must have related exp using Oracle 7.0, Oracle Case tools, Oracle CDE tools, PowerBuilder & James Martin's IE Expert on Unix & VAX/VMS; $50,000/yr, 40 hrs/wk 8a-5p. Send resume to 7310 Woodward Ave., Room 415, Detroit, MI 48202. Ref. #139195 "Employer Paid Ad."

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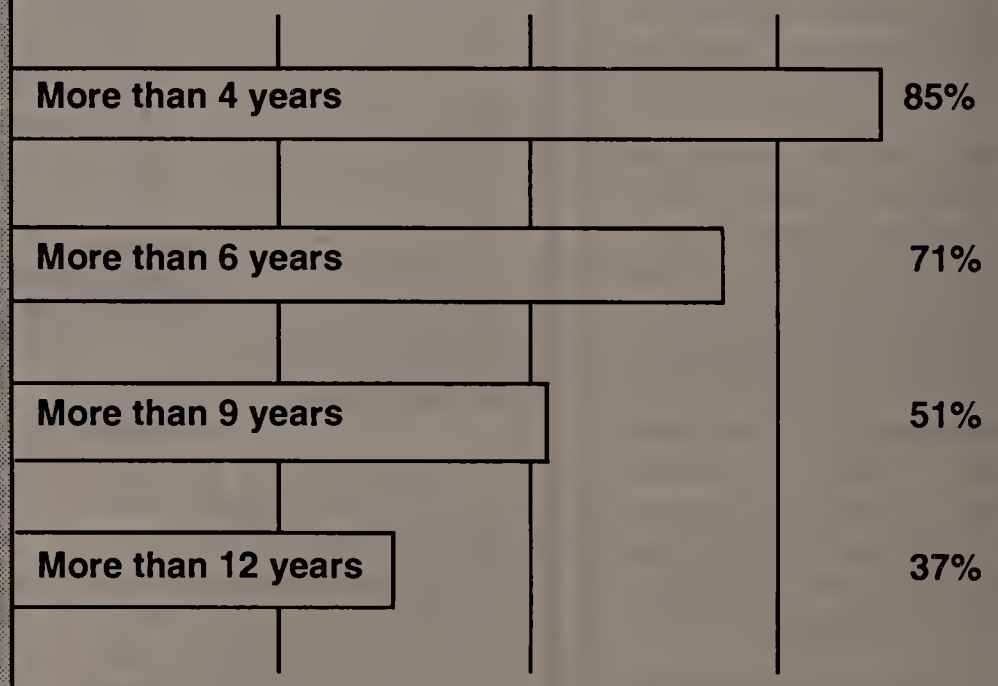

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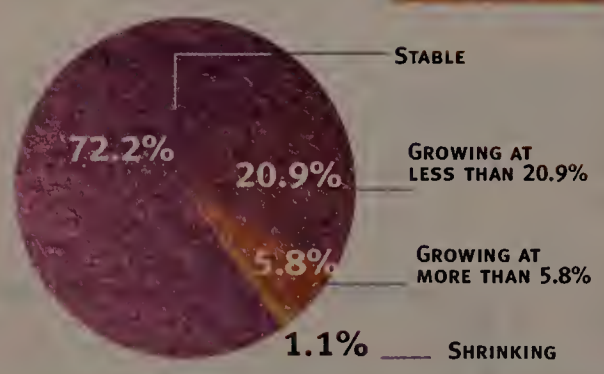

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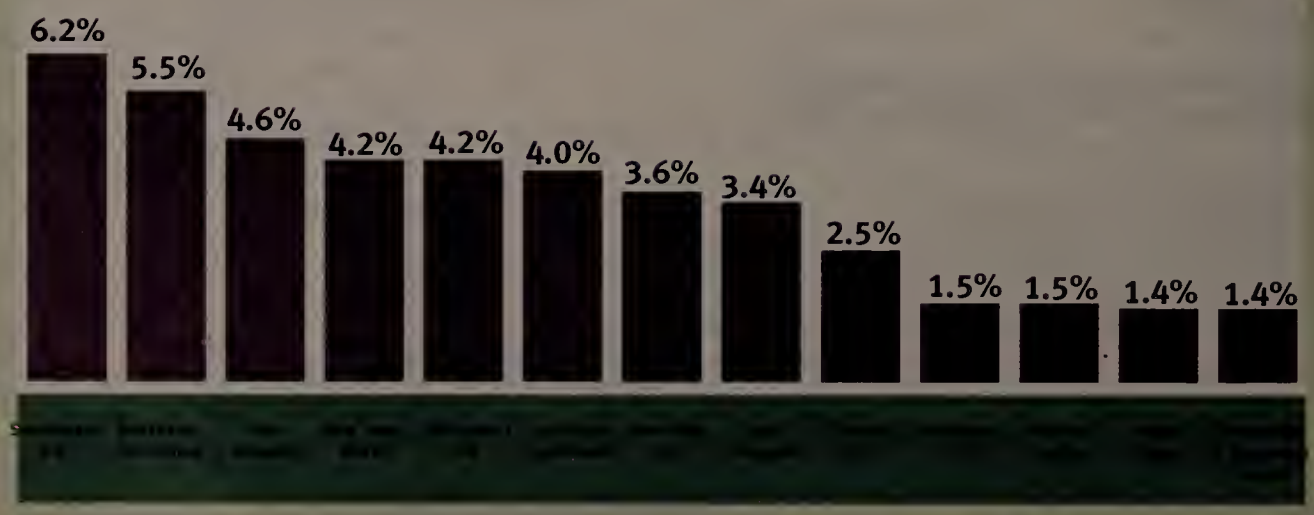

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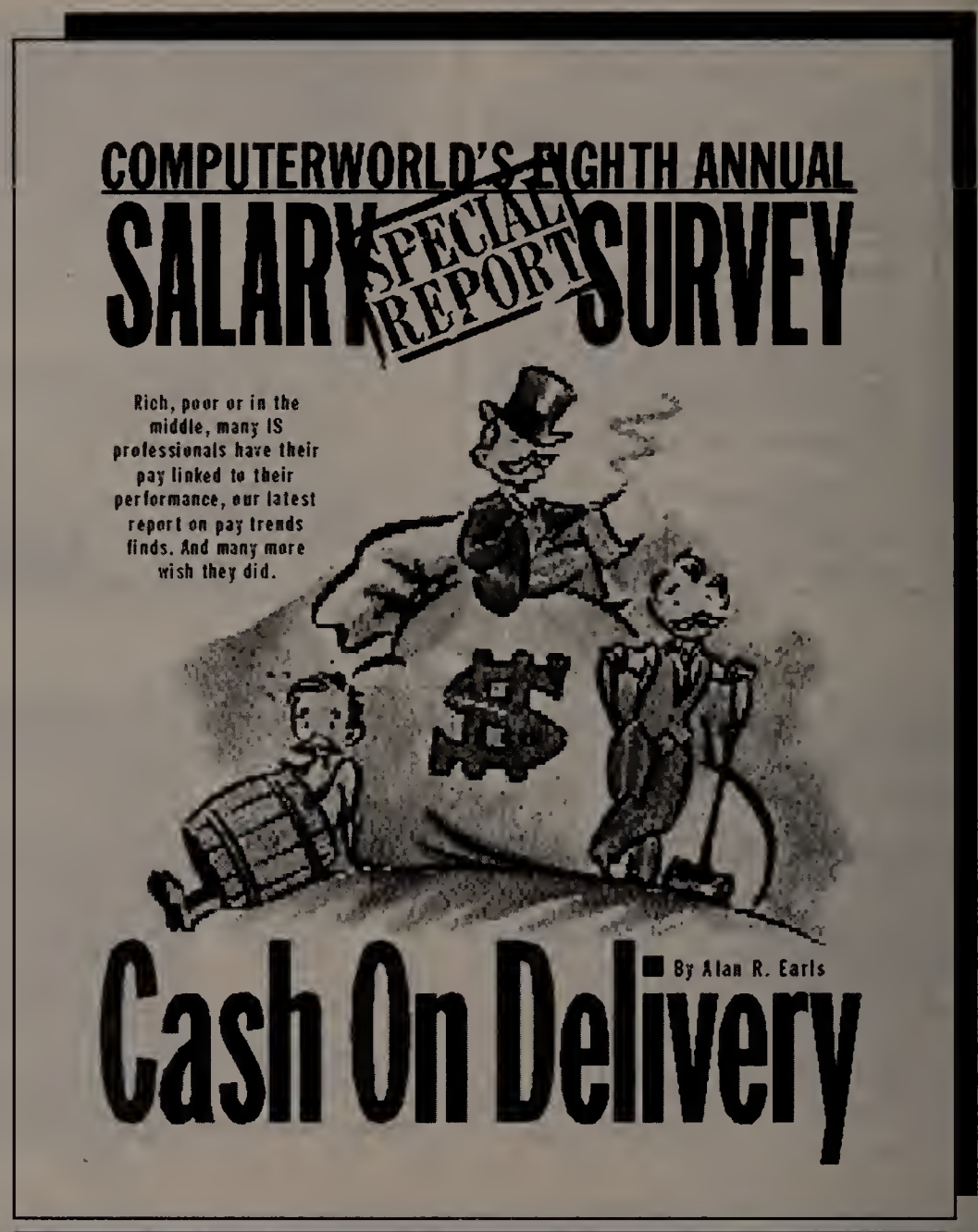

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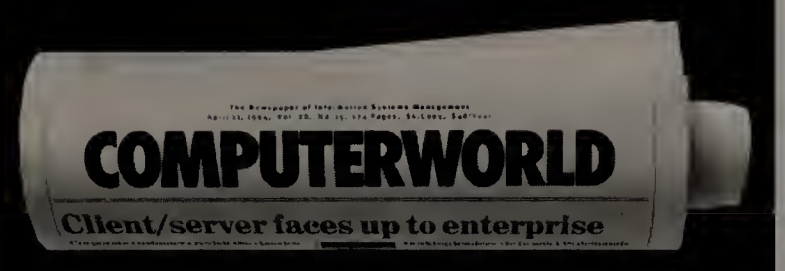

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Marketplace

CD-ROM sampler

By Alan Radding

No matter if it's business or pleasure, CD-ROMs are hot stuff. Last year, sales hit 22.8 million units, totaling $648 million, according to the Software Publishers Association in Washington. Roughly 45% of that came in the fourth quarter alone, suggesting that they're big Christmas items.

If you look closely, the numbers are even more staggering. There are more than 10,000 titles in circulation, according to *Multimedia Merchandising Magazine* in Santa Monica, Calif., a publication aimed at CD-ROM retailers. In May, 1,700 more were announced.

Large retailers can stock no more than 300 to 500 titles, and reviewers barely scratch the surface. So what's a buyer to do?

Like the publishing and record industry, the CD-ROM market has its own best-seller lists. Below, Jim McCullough, publisher of *Multimedia Merchandising* and author of *Entertainment in the Cyberzone*, lists his personal favorites, the best-selling titles and those that every hip CD-ROM library should have.

So go wild and experiment if you haven't already. CD-ROMs provide a ton of information and entertainment, but don't forget the drain they put on your hard disk. Choose your titles wisely. ■

Radding is a freelance wirter in Newton, Mass.

TAKE STOCK

The Top 3 CD-ROM subject areas are games, content products and miscellaneous, but languages and tool-related CD-ROMs experienced the most growth last year

1993 to 1994 growth

Language and tools	**434%**
Miscellaneous	**348%**
Games/Home products	**275%**
Education	**229%**
Content software	**143%**

Based on sales of 52 leading CD-ROM publishers

SOURCE: SOFTWARE PUBLISHERS ASSOCIATION, WASHINGTON

Recommended computer industry

- Computer Select (Ziff Davis)
- Print Shop Deluxe CD Ensemble (Broderbund Software, Inc.)
- Corel Gallery (Corel Corp.)

Internet-related:

- Internet Info (Walnut Creek) contains technical information from and about the Internet, including frequently asked questions and security advisories
- Atlantis Internet CD-ROM, (Atlantis Innovation) contains many shareware programs and executable files for Windows and Unix
- Internet Tools (InfoMagic, Inc.) contains program files for Unix, Windows, MVS, Macintosh, OS/2, Amiga and MS-DOS

Recommended entertainment

The top five best-selling entertainment CD-ROMs in July were:

- Myst (Broderbund)
- Star Trek Next Generation, Final Unity (Spectrum Holobyte, Inc.)
- Dark Forces (LucasArts Entertainment Co.)
- Full Throttle (LucasArts)
- Descent (Interplay) Productions, Inc.)

Other best-sellers include the following:

- 5 Ft. 10 Pak (Sirius Publishing)
- Star Wars Rebel Assault (LucasArts)
- Outpost (Sierra On-Line, Inc.)
- Betrayal at Krondo (Sierra On-Line)
- Flight Simulator (Microsoft Corp.)
- Harpoon 2 (Three Sixty)

Source: *Multimedia Merchandising Magazine*, Santa Monica, Calif.

Recommended content/reference

You can't go wrong with any of the leading electronic encyclopedias. Usually one of these comes bundled with whatever CD-ROM hardware you buy. The Top 3 are

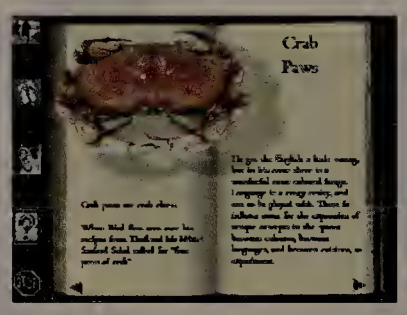
- Encarta (Microsoft)
- Compton's Interactive Encyclopedia (Compton's NewMedia, Inc.)
- New Grolier Multimedia Encyclopedia (Grolier Electronic Publishing Co.)

Something different

For those whose tastes run to the more esoteric, Jim McCullough, publisher of *Multimedia Merchandising Magazine*, suggests two interesting titles:

Four Paws of Crab (Live Oak Multimedia): a Thai cookbook that combines recipes with multimedia presentations of Thai history and culture.

Prophone series (Pro CD, Inc.): a set of CD-ROMs reportedly containing the listings from about 5,000 local phone books.



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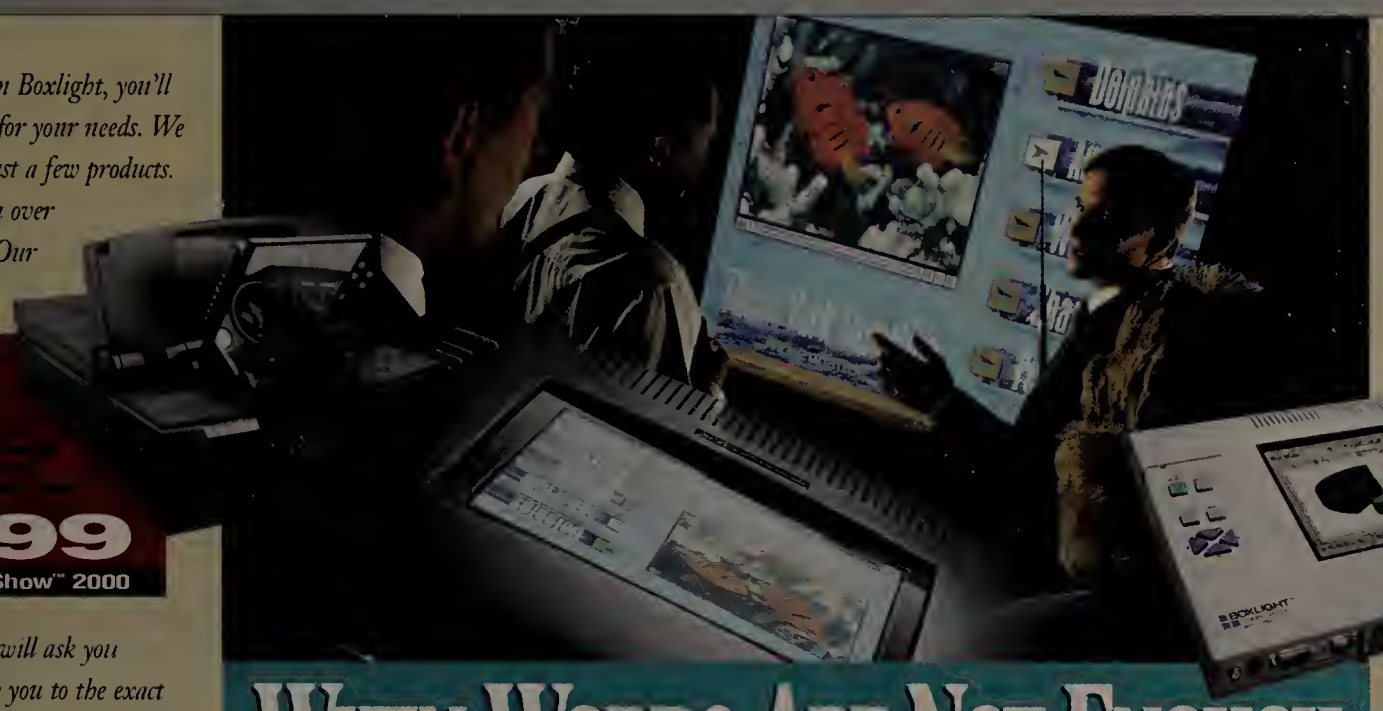

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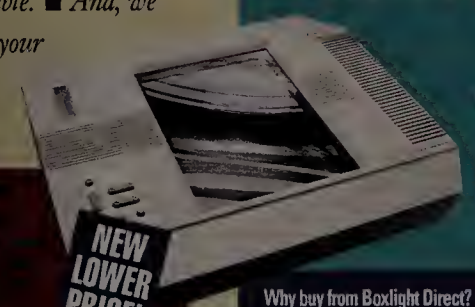

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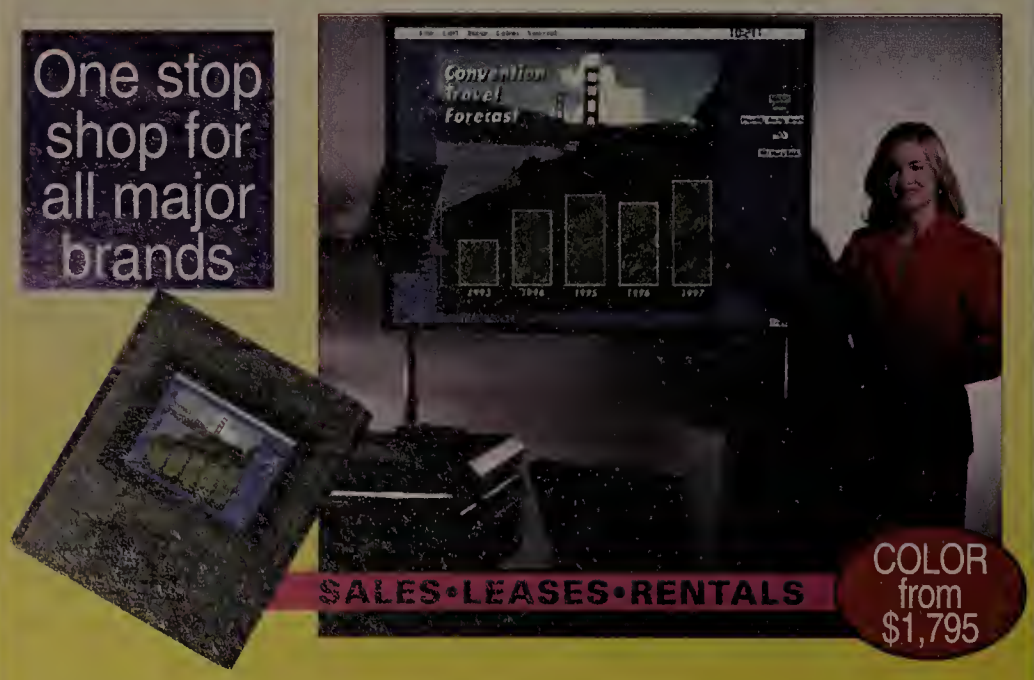

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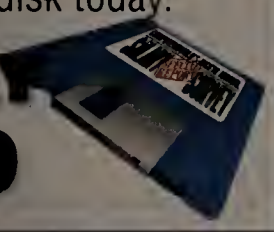

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Advertisers' Index

AT&T	34-35
Banyan	48
Cabletron	C3
Command Technology	15
Compaq Computer Corp.	38-39
Compuware	18-19, 46
CW Circulation	62, 80
CW Custom Pubs	24
CW IS Leaders	68-69
CW Marketing	76-77
D&B Software	72
Dell	C4
Digital Equipment Corp.	22-23
EMC Corp.	58
Genicom	64-65
Gifts In Kind America	71
Gupta Corporation	42
Hewlett Packard	36
IBM	45, 47, 56-57
Information Builders	17
Informix Software	25
Interface Group	108
IS Leadership Series	32/33
Lotus Development Corp.	26-27
Micro Focus	7
Microsoft	30-31, 50-51
NetManage	28
Nokia Display Products	37
Oracle	5
Racal Datacom	60-61
Red Brick	20
Rolm	11
SAS Institute	21, 66
Seer Technology	10
Software AG	53
Sybase	13
Symbios Logic	80/81
Syncsort	3
Texas Instruments	9
3Com	55
Toshiba	78, 79
Unisys	63
WHITE PAPER	40/41
Workstation Group	54

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Marketplace Advertisers' Index
Pages 100-104

Alicomp	(800)274-5556
Allen Systems Group	(800) 932-5536 x411
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Spectra Equipment	(800) 745-1233
Stratagy	(800) 873-0724
Sysware Systemberatung	011 [illegible]

Companies in this issue

Page number refers to page on which story begins

A

Aberdeen Group, Inc. ... 1,10
ACT Networks, Inc. ... 1
Advanced Software Technologies, Inc. ... 46,71
Advocate Healtheare ... 59
Aetna Life and Casualty Co. ... 8
Airmotive Ireland ... 16
AirSoft, Inc. ... 8
Allen Lund Co. ... 1
Aluminum Company of America ... 59
America Online, Inc. ... 37
Amoco Petroleum Canada Ltd. ... 43
API International ... 16
Apple Computer, Inc. ... 6
Arbor Software Corp. ... 46,71
Arizona Department of Transportation ... 64
Arizona State University ... 8,64
Assoeiation of Ameriean Medieal Colleges ... 16
AST Research, Inc. ... 14
AT&T Corp. ... 8,32
AT&T Global Information Solutions ... 32,67
AutoSystems Corp. ... 44

B

Bank of Ameriea ... 43,52
Banyan Systems, Inc. ... 49
Barelays Bank PLC ... 54
Bay Networks, Inc. ... 49
BMC Software, Inc. ... 62
Bolt Beranek and Newman, Inc. ... 49
Borland International, Inc. ... 37,59,67
Braun Technology Group ... 46,71

C

Cabletron Systems, Inc. ... 4,49
CACI International, Inc. ... 64
California State Teaehers Retirement System ... 73
Campbell Soup Co. ... 65
Carnegie Mellon University ... 70
Caseade Communieations Corp. ... 4
Centigram Communieations ... 81
CGI Systems, Inc. ... 85
Channel Marketing Corp ... 6
CIMI Corp. ... 4,44
Ciseo Systems, Inc. ... 8,49,81
Citibank NA ... 8
Communieations Network Arehiteets, Inc ... 44,70
Compaq Computer Corp. ... 6,8,14,52,74,107
Computer & Communieations Industry Association ... 8
Computer Associates International, Inc. ... 4
Computer Intelligenee, Inc. ... 44
Conner Peripherals, Inc. ... 107
Coorens Communieations, Inc. ... 40
Corning, Inc ... 8

D

Dataquest, Inc ... 43
Dell Computer Corp ... 6,14
Dialogie Corp. ... 46,71
Digital Consulting, Inc ... 59
Digital Equipment Corp. ... 1,16,43,46,52,59,65,67
Digitalk, Inc ... 71
Du Pont Co. ... 43
Duke Power Co. ... 12

E

Effieient Networks, Inc ... 4
Electric Power Research Institute ... 81,82
Electronie Data Systems Corp ... 85
Emory University ... 1
Ensemble Systems Consulting ... 67
Epilog Technology Corp. ... 52
Europcar International SA ... 54
Evergreen Hospital Medieal Center ... 37
ExecuTrain ... 85
Expersoft Corp. ... 8
Extended Systems, Inc ... 37

F

Federal Reserve Bank of Philadelphia ... 59
FileNet Corp. ... 44
Fujitsu Ltd. ... 16
Fujitsu Mieroeleetronies, Inc ... 52
Fulerum Teehnologies, Inc. ... 44

G

Galorath Assoeiates, Inc. ... 70
Gartner Group, Inc. ... 14,20,40
Gateway 2000, Inc ... 6,14,107
General DataComm Industries, Inc. ... 4
General Eleetrie Investment Corp ... 73
General Magie, Inc ... 32
Gensym Corp ... 70
Groupe Bull ... 46
GSCS, Inc ... 73
Gulf Forge, Inc. ... 14

H

Hambreeht & Quist, Inc. ... 107
Health Net Corp. ... 8
Henniger, Mereer & Bennet ... 44
Hewlett-Packard Co. ... 4,6,8,16,43,46,49,71,74,81
Hibernia National Bank ... 4
Hitaehi Ameriea Ltd. ... 46

I

IBM's Thomas J. Watson Researeh Center ... 12
IBM ... 1,4,6,8,10,16,43,46,52,59,62,65,70,74
Ieon Consulting, Inc ... 44
Ieot Corp. ... 82
Informix Software, Inc. ... 59
Inset Systems, Inc. ... 37
Integra Teehnology International, Inc ... 46,71
Integrated Systems Solutions Corp. ... 65
Intel Corp. ... 6,8,43,46,64
IntelliCom Solutions, Inc ... 52
Intelligent Communieations Software GmbH (ICS) ... 4
Interex ... 16
International Data Corp ... 6,24,32,54
Ioele/Griggs Assoeiates, Inc. ... 1
Iona Teehnologies Ltd. ... 70
Iridium, Inc ... 70
ISDN Systems Corp. ... 52
ITT Hartford Life Cos. ... 1

J

J-3 Learning Corp. ... 85
Jack Morton Produetion ... 6

K

KPMG Peat Marwick ... 52

L

L & H Teehnologies, Inc. ... 85
LanAire ... 52
Learning Tree International ... 85
Liberty Mutual Insuranee Group ... 44
Link Resources Corp. ... 32
Logical Operations ... 85
Lotus Development Corp. ... 1

M

Marketex Computer Corp. ... 6
Mastereard International, Inc. ... 8
MCA/Universal Home Video, Inc. ... 49
MeAfee Assoeiates, Inc. ... 14,20
MeDonnell Douglas Space and Defense System ... 70
MCI Communieations Corp. ... 8,37
MeKinsey & Co. ... 52
Meca Software, Inc. ... 52
Memotee Corp. ... 1
Mereury Researeh, Inc. ... 6
Meta Group, Inc. ... 59
Mieom Communieations Corp. ... 1
Mierografx, Inc. ... 37
Mieron Teehnology ... 107
MieroPath, Inc. ... 40
Mierosoft Corp. ... 1,4,6,8,14,37,44,46,59,65,67,71,81,107
Mitsubishi Eleetrie Corp. ... 43,46
Motorola, Inc. ... 6,8,32,44,46,52,70

N

n Brothers, Inc. ... 73
n Group, Inc. ... 49
National Computer Security Association ... 12
National Semieonduetor Corp. ... 52
NCR Corp ... 32
NEC Corp. ... 46
NEC Teehnologies, Inc. ... 6
Neteom On-Line Communieation Serviees, Inc. ... 37
Netseape Communieations Corp. ... 8,14
Network Equipment Teehnologies, Inc. ... 4
Network Imaging Corp. ... 44
New Horizons Computer Learning Centers ... 85
New York Life Insuranee Co. ... 52
Novell, Inc. ... 4,10,37,74

O

Olieom, Inc. ... 4
Open Software Foundation ... 46
Oracle Corp. ... 59
Oregon State University ... 85

P

P.M.I. Comereio Internaeional ... 16
ParePlaee-Digitalk, Inc. ... 46
Parity Software Development Corp ... 46,71
Patrieia Seybold Group ... 1
PeopleSoft, Inc. ... 64
Performance Computing ... 59,109
Performanee Teehnology, Inc. ... 54
Planning Sciences, Inc. ... 59
Platinum Teehnology, Inc. ... 62
Powersoft Corp. ... 46,67,71
Primavera Systems, Inc. ... 70
Prodigy Serviees Co. ... 52
Produetivity Point International ... 85
Provident Life & Aecident Co. ... 10
Prudential Assuranee Co. ... 44
Pyramid Teehnology Corp. ... 65

Q

Quantum Corp. ... 107

R

Ross Technology, Inc. ... 44

S

SAP AG ... 65
SAP Ameriea, Inc. ... 4
Seott & White Health Plan ... 16
Seagate Teehnology, Inc ... 107
Sequoia Systems Inc. ... 8
Share, Inc. ... 1
Siemens/Nixdorf Informationssysteme AG ... 46
Silieon Graphies, Inc. ... 43,46,64,71
SoftTraeks Software Researeh ... 67
Software Teehnology, Inc. ... 70
Sony Pietures Entertainment ... 8
Sprint Corp. ... 52,54
State Street Bank & Trust Co. ... 73
Storage Teehnology Corp ... 65
StrataCom, Inc ... 4
Sun Mierosystems Computer Corp. ... 43
Sun Mierosystems, Inc. ... 4,16,43,44,46,49,59,71
SunSoft, Inc. ... 44
Sybase, Inc. ... 74
Symantee Corp. ... 37,40

T

Taligent, Inc. ... 10
Tandem Computers, Inc. ... 74
TechBridge Teehnology Corp. ... 46,71
TeleChoiee, Inc. ... 1,4
Texas Instruments, Inc. ... 107
The Bank of New York ... 73
The Chase Manhattan Bank NA ... 73
The Clipper Group, Inc. ... 1
The Washington Post ... 8
The Yankee Group ... 4,6,32
Time, Inc ... 59
Tivoli Systems, Inc. ... 44
TomTee Imaging Systems, Inc. ... 20
Toshiba Ameriea Information Systems, Inc ... 8
Transammonia, Inc. ... 1
Trusted Information Systems, Inc. ... 8

U

UB Networks, Inc. ... 4
Unison Software Corp. ... 44
Unisys Corp ... 44,59,65
United Pareel Serviee, Inc ... 37
Utah Department of Economie Development ... 14

V

Visa U.S.A., Inc. ... 8

W

Watermark Software, Inc ... 44
Wells Fargo Bank ... 52
West Jersey Health Systems ... 14
Westeo Teehnologies, Inc. ... 24
Western Digital Corp. ... 107
Wombat Internet Guild ... 82

X

X/Open Co. ... 46
Xireom, Inc. ... 52

Z

Zenith Data Systems ... 52

Gainers

Percent

US Robotics(H)	50.0
Creative Technologies Inc.	44.6
Rexon Inc.	42.9
Integrated Silicon Systems(H)	25.0
VLSI Technology(H)	22.7
Cirrus Logic(H)	22.3
American Software Inc.(H)	20.0
Cambridge Tech. Partners(H)	19.8

Dollar

US Robotics(H)	13.75
Integrated Silicon Systems(H)	11.50
Texas Instruments(H)	10.13
Cirrus Logic(H)	9.88
Sun Microsystems Inc.(H)	8.75
Hewlett Packard Co.	8.00
3 COM Corp.	7.75
Micron Technology(H)	7.63

Losers

Percent

Group I Software	-17.6
Radius Inc.	-9.6
Harris Computer Systems Corp.	-8.6
Rasterops	-8.3
Racotek Inc.	-8.3
MICOM Communications Corp.	-7.5
Cognitronics Corp.(H)	-7.4
Network Computing Devices	-7.1

Dollar

Group I Software	-3.00
Ascend Communications(H)	-2.75
Intersolv Inc.	-1.63
Harris Computer Systems Corp.	-1.25
Legent Corp.	-1.13
Cognos Inc.(H)	-1.00
Shared Medical Systems	-1.00
Bolt, Beranek & Newman	-0.88

Lights, camera, action!

The lights are dimmed. The overture has begun. Windows 95, like the revival of a much-loved Broadway production, won't have too many surprising plot twists. The large crowds drawn to **Microsoft Corp.**'s blockbuster launch should guarantee an excellent run and mean good things for third-party vendors involved in it.

The direct impact on the stock prices of companies with Windows 95-related products will be small at first, said Todd Bakar, an analyst at Hambrecht & Quist in San Francisco.

"Most of the excitement over Windows 95 is already reflected to some extent and has been built in to the stock prices [of related companies]," Bakar said.

However, stock prices will gradually start to reflect their proximity to the Windows 95 neighborhood. PC vendors with a strong consumer presence, such as **Compaq Computer Corp. (CPQ)** and **Gateway 2000, Inc. (GATE)**, should have a good fall and winter through a combination of Windows 95 interest and back-to-school and holiday shopping, Bakar said. He added that the crowds should also have a positive effect on disk drive manufacturers, such as **Seagate Technology, Inc. (SGAT)**, **Quantum Corp. (QNTM)** and **Conner Peripherals, Inc. (CNR)**, and chip and memory companies, such as **Micron Technology, Inc. (MU)**, **Texas Instruments, Inc. (TXN)** and **Western Digital Corp. (WDC)**.

The crowd is hushed. The curtain is rising.

—Stewart Deck

Waiting in the wings

Several companies are hoping to capitalize on the launch of Windows 95 and see their stock prices climb over time

Company	Price per share*
PC vendors	
Compaq	53 1/2
Gateway 2000	27 3/8
Disk drive manufacturers	
Seagate Technology	24 5/8
Quantum	25 3/8
Conner Peripherals	14
Chips and memory vendors	
Micron Technology	72 1/2
Texas Instruments	162
Western Digital	21 1/4

*At closing Aug. 16, 1995

Exch	52-Week Range			Aug. 17 Close	Wk Net Change	Wk Pct Change
Communications and Network Services						**UP 2.83%**
OTC	79.00	26.75	3 COM Corp.	78.25	7.75	11.0
NYS	49.38	38.00	AMERITECH Corp.	48.75	1.13	2.4
NYS	59.00	47.25	AT&T	51.88	0.38	0.7
OTC	74.75	10.00	Ascend Communications (H)	67.75	-2.75	-3.9
OTC	19.75	10.00	Banyan Systems Inc.	11.00	-0.25	-2.2
OTC	48.25	23.13	Bay Networks Inc.	48.00	3.63	8.2
NYS	59.75	48.38	Bell Atlantic Corp.	58.00	0.63	1.1
NYS	69.00	50.50	Bellsouth Corp.	65.75	0.00	0.0
NYS	39.38	12.63	Bolt, Beranek & Newman	35.00	-0.88	-2.4
OTC	22.25	9.00	Brooktrout Technology	21.00	1.50	7.7
NYS	59.63	37.38	Cabletron Systems	54.88	1.63	3.1
OTC	22.25	12.25	Centigram Communications	16.44	0.81	5.2
OTC	50.50	20.00	Chipcom Corp.	40.13	4.00	11.1
OTC	62.50	21.75	Cisco Systems Inc. (H)	60.88	2.25	3.8
OTC	12.00	6.13	Compression Labs Inc.	8.00	-0.13	-1.5
OTC	12.75	5.63	Computer Network Tech.	8.13	0.25	3.2
OTC	14.50	7.50	CrossComm	10.88	0.13	1.2
OTC	4.50	2.13	Data Switch Corp.	4.31	0.00	0.0
OTC	55.50	23.00	DSC Communications	53.13	1.75	3.4
OTC	42.00	15.00	FORE Systems Inc.	35.50	0.88	2.5
NYS	35.88	9.25	General Datacomm Inds.	12.75	0.63	5.2
NYS	36.38	29.50	GTE Corp.	36.13	0.38	1.0
NYS	121.88	77.00	ITT Corp.	118.50	1.50	1.3
OTC	25.88	17.25	MCI Commmunications Corp.	23.75	0.63	2.7
OTC	15.75	5.50	MICOM Communications Corp.	7.75	-0.63	-7.5
OTC	22.25	6.63	Microcom Inc.	19.75	-0.25	-1.3
OTC	10.50	4.00	Netrix Corp.	5.13	-0.13	-2.4
OTC	12.00	3.25	Network Computing Devices	9.75	-0.75	-7.1
NYS	33.25	10.75	Network Equipment Tech. (H)	33.13	2.13	6.9
OTC	36.13	15.63	Network General	33.00	0.25	0.8
NYS	43.38	27.00	Newbridge Networks Corp.	30.25	1.25	4.3
NYS	41.00	31.25	Northern Telecom Ltd.	36.75	0.13	0.3
OTC	23.25	13.75	Novell Inc.	21.00	2.88	15.9
NYS	45.13	35.63	Nynex Corp. (H)	44.63	1.00	2.3
OTC	39.25	17.75	Octel Communications Corp.	37.00	0.88	2.4
OTC	33.00	8.00	Optical Data Systems Inc.	30.75	2.00	7.0
OTC	6.75	2.13	Penril Data Comm Networks	6.75	2.25	50.0
OTC	62.00	14.75	Picturetel Corp.	56.63	2.25	4.1
OTC	8.13	2.63	Proteon Inc.	6.50	-0.38	-5.5
OTC	7.88	3.00	Racotek Inc.	5.50	-0.50	-8.3
OTC	6.75	3.50	Retix	3.94	-0.06	-1.6
NYS	24.88	17.50	Scientific Atlanta Inc.	21.00	-0.38	-1.8
NYS	50.13	39.25	Southwestern Bell Corp.	48.13	-0.88	-1.8
NYS	40.13	25.88	Sprint Corp.	33.88	0.38	1.1
OTC	31.63	12.50	Standard Microsystems Corp.	17.50	0.25	1.4
OTC	57.50	16.25	Stratacom Inc.	54.00	2.75	5.4
OTC	8.13	3.63	Telebit Corp.	4.31	-0.13	-2.8
OTC	159.25	29.50	US Robotics (H)	159.25	13.75	9.5
NYS	45.00	29.63	U S West Inc.	42.75	0.13	0.3
OTC	23.50	9.13	Xircom	11.00	0.00	0.0
OTC	38.25	8.38	Xylogics Inc. (H)	37.00	2.75	8.0
PCs and Workstations						**UP 4.70%**
OTC	7.63	3.63	Advanced Logic Research	6.56	-0.31	-4.5
OTC	50.13	32.50	Apple Computer Inc.	44.63	2.00	4.7
OTC	19.25	10.38	AST Research Inc.	14.13	0.50	3.7
NYS	54.63	30.75	Compaq Computer Corp. (H)	54.25	2.13	4.1
OTC	74.25	30.75	Dell Computer Corp. (H)	74.25	4.75	6.8
OTC	30.38	13.56	Gateway 2000 Inc.	27.38	-0.50	-1.8
NYS	83.88	41.75	Hewlett Packard Co.	83.88	8.00	10.5
OTC	20.13	2.75	Micron International Inc.	18.13	-0.38	-2.0
NYS	45.63	23.38	Silicon Graphics	44.00	5.00	12.8
OTC	57.63	24.13	Sun Microsystems Inc. (H)	56.75	8.75	18.2
NYS	60.75	38.75	Tandy Corp. (H)	60.13	-0.50	-0.8
Large Systems						**UP 1.27%**
ASE	13.63	6.63	Amdahl Corp.	9.69	-0.19	-1.9
NYS	8.88	3.63	Convex Computer	4.63	-0.13	-2.6
NYS	74.38	14.63	Cray Research Inc.	23.38	0.00	0.0
NYS	12.00	6.75	Data General Corp.	10.63	0.38	3.7
NYS	49.50	20.38	Digital Equipment Corp.	42.63	0.88	2.1
OTC	5.56	1.06	Encore Computer Corp.	1.50	0.06	4.3
OTC	18.50	9.25	Harris Computer Systems Corp.	13.25	-1.25	-8.6
NYS	113.63	63.75	IBM (H)	113.63	4.25	3.9
OTC	7.88	3.00	Meridian Data Inc.	7.00	0.38	5.7
OTC	12.25	4.25	NetFrame	6.38	0.75	13.3
OTC	25.25	14.13	Sequent Computer Sys. (H)	24.38	1.63	7.1
OTC	10.00	3.13	Sequoia Systems Inc.	7.19	0.19	2.7
NYS	39.88	23.00	Stratus Computer Inc. (L)	24.00	0.00	0.0
NYS	19.75	12.00	Tandem Computers Inc.	12.50	-0.13	-1.0
OTC	7.63	3.38	TriCord Systems	3.38	-0.25	-6.9
NYS	13.63	8.25	Unisys Corp.	8.63	-0.13	-1.4
Software						**UP 3.18%**
OTC	66.50	27.25	Adobe Systems Inc.	62.75	4.13	7.0
OTC	7.13	2.50	American Software Inc. (H)	6.75	1.13	20.0
OTC	33.00	9.75	Applix Inc.	29.25	1.75	6.4
OTC	53.00	24.63	Autodesk Inc. (H)	50.88	3.63	7.7
OTC	7.88	1.88	Bachman Info. Systems	6.38	0.44	7.4
OTC	34.00	22.00	BGS Systems Inc.	32.50	0.00	0.0
OTC	45.75	20.13	BMC Software Inc.	45.13	6.50	16.8
OTC	31.25	16.88	Boole & Babbage	30.00	0.00	0.0
OTC	14.38	6.00	Borland Int'l Inc.	13.25	1.75	15.2
OTC	11.75	5.75	Brock Control Systems Inc.	8.38	-0.13	-1.5
OTC	3.75	1.78	CE Software	2.25	-0.06	-2.7
ASE	22.00	8.75	Cheyenne Software Inc. (H)	20.88	0.50	2.5
OTC	32.88	10.50	Cognos Inc. (H)	31.56	-1.00	-3.1
NYS	77.50	37.50	Computer Associates	75.25	1.25	1.7
NYS	14.38	2.50	Computervision Corp. (H)	13.13	1.75	15.4
OTC	49.25	21.50	Compuware Corp.	24.00	0.63	2.7
OTC	32.38	9.00	Comshare Inc. (H)	31.25	0.00	0.0
OTC	19.50	10.13	Corel Corp.	18.13	-0.25	-1.4
OTC	16.25	8.25	Dataware Technologies Inc.	13.50	-0.44	-3.1
OTC	46.00	18.75	Filenet Corp.	45.25	1.63	3.7
OTC	8.25	3.38	4th Dimension	6.88	-0.38	-5.2
OTC	33.00	11.50	Frame Technology	32.75	2.63	8.7
OTC	35.50	14.88	FTP Software Inc.	24.75	1.50	6.5
OTC	26.00	8.00	Group I Software	14.00	-3.00	-17.6
OTC	13.88	8.25	Gupta	8.88	0.13	1.4
OTC	12.00	4.63	Hogan Systems Inc.	11.00	-0.38	-3.3
OTC	53.75	26.00	Hyperion Software Corp.	50.63	1.13	2.3
OTC	18.63	11.25	Information Resources	13.38	0.50	3.9
OTC	32.38	10.25	Informix Corp.	30.75	1.13	3.8
OTC	14.38	7.38	Intergraph Corp.	11.38	0.13	1.1
OTC	10.63	2.88	Interleaf Inc.	9.38	0.13	1.4
OTC	26.25	11.00	Intersolv Inc.	23.00	-1.63	-6.6
OTC	90.25	38.75	Intuit Inc.	89.75	1.25	1.4
OTC	48.25	20.75	Legent Corp.	46.75	-1.13	-2.3
OTC	11.50	3.63	Magic Software Enterprises	10.88	-0.13	-1.1
OTC	16.50	6.75	Manugistics Group Inc.	15.25	-0.50	-3.2
OTC	40.00	14.75	MapInfo Corp.	23.00	0.25	1.1
OTC	7.38	1.44	MathSoft	6.63	0.13	1.9
OTC	45.25	8.00	McAfee Associates (H)	43.50	5.50	14.5
OTC	19.88	9.50	Mentor Graphics	18.31	0.44	2.4
OTC	15.00	10.75	Micro Focus	11.50	0.00	0.0
OTC	10.63	5.00	Micrografx Inc.	9.75	0.63	6.8
OTC	109.25	53.88	Microsoft Corp.	99.13	3.88	4.1
OTC	22.50	8.25	NetManage Inc.	19.25	1.50	8.5
OTC	44.00	24.75	Oracle Corp.	43.19	2.69	6.6
OTC	59.50	25.50	Parametric Technology (H)	57.25	0.25	0.4
OTC	24.25	7.88	ParcPlace Systems Inc.	9.75	0.50	5.4
OTC	76.50	21.00	Peoplesoft	71.00	4.25	6.4
OTC	12.88	4.88	Phoenix Technologies	11.50	-0.13	-1.1
OTC	16.88	6.00	Platinum Software	14.88	0.00	0.0
OTC	25.25	13.50	Platinum Technology	22.19	-0.31	-1.4
OTC	59.50	29.50	Progress Software Corp.	57.50	3.75	7.0
OTC	17.50	1.94	Quarterdeck Corp.	16.19	-0.06	-0.4
OTC	26.75	10.75	Rainbow Technologies Inc.	23.75	-0.75	-3.1
OTC	8.38	2.00	Rasterops	6.88	-0.63	-8.3
OTC	7.00	3.00	Ross Systems	6.50	-0.13	-1.9
OTC	48.00	12.00	Softkey International Inc. (H)	47.25	0.00	0.0
OTC	6.25	2.88	Software Publishing Corp.	3.81	0.06	1.7
OTC	12.50	5.25	State of the Art	9.13	1.13	14.1
NYS	46.13	27.63	Sterling Software Inc. (H)	46.13	5.13	12.5
OTC	16.25	4.63	Struct. Dynamics Research (H)	15.81	1.75	12.4
OTC	55.00	19.88	Sybase Inc.	34.13	1.00	3.0
OTC	32.38	11.63	Symantec Corp. (H)	31.63	2.88	10.0
OTC	67.25	39.50	SynOpsys	61.25	2.63	4.5
OTC	30.00	10.63	System Software Assoc.	26.75	2.75	11.5
OTC	18.13	5.50	Systemsoft Corp.	16.13	1.50	10.3
OTC	8.13	3.25	Trinzic Corp.	7.25	-0.25	-3.3
OTC	24.00	7.88	ViewLogic Systems	12.00	-0.38	-3.0
OTC	22.00	10.75	VMark Software Inc.	17.25	2.25	15.0
OTC	10.75	4.63	Walker Interactive Systems	6.50	0.13	2.0
OTC	55.50	15.00	Wall Data Inc.	19.25	0.75	4.1
OTC	19.50	9.13	Wang Laboratories Inc.	17.94	-0.06	-0.3
Semiconductors						**UP 8.68%**
NYS	39.25	22.25	Advanced Micro Devices	35.50	2.25	6.8
NYS	39.50	19.63	Analog Devices Inc. (H)	37.25	0.50	1.4
OTC	36.13	12.25	Atmel Corp. (H)	34.88	2.75	8.6
OTC	15.50	3.88	Chips and Technologies	14.00	0.63	4.7
OTC	54.25	10.50	Cirrus Logic (H)	54.25	9.88	22.3
NYS	55.25	15.00	Cypress Semiconductor Corp.	53.38	3.25	6.5
NYS	222.00	13.38	Dallas Semiconductor	24.25	1.25	5.4
OTC	67.00	21.50	Integrated Silicon Systems (H)	57.50	11.50	25.0
OTC	78.38	28.75	Intel Corp.	65.63	-0.25	-0.4
NYS	52.50	14.63	LSI Logic Corp. (H)	52.50	5.75	12.3
OTC	43.00	15.50	Lattice Semiconductor	34.38	3.94	12.9
NYS	72.88	15.25	Micron Technology (H)	70.88	7.63	12.1
NYS	80.13	49.00	Motorola Inc.	77.25	1.13	1.5
NYS	31.25	14.38	National Semiconductor	30.50	3.50	13.0
OTC	57.25	10.50	Sierra Semiconductor (H)	52.19	3.94	8.2
NYS	163.25	63.38	Texas Instruments (H)	159.00	10.13	6.8
OTC	35.13	10.25	VLSI Technology (H)	35.13	6.50	22.7
OTC	5.25	1.78	Weitek	4.13	-0.25	-5.7
ASE	21.75	13.13	Western Digital Corp.	21.50	1.25	6.2
OTC	43.50	13.92	Xilinx	42.25	3.20	8.2
OTC	54.13	37.38	Zilog Inc.	47.00	1.88	4.2
Peripherals and Subsystems						**UP 7.16%**
OTC	25.88	14.38	American Power Conversion	16.63	0.13	0.8
OTC	47.25	17.25	Adaptec Inc. (H)	46.25	2.63	6.0
OTC	27.25	14.75	Banctec Inc.	18.00	0.38	2.1
OTC	13.13	3.38	Cambex Corp.	12.13	0.63	5.4
ASE	6.38	1.38	Cognitronics Corp. (H)	5.50	-0.44	-7.4
NYS	14.63	9.00	Conner Peripherals	14.25	1.00	7.5
OTC	19.63	5.88	Creative Technologies Inc.	11.75	3.63	44.6
OTC	13.13	3.50	Data Race Inc.	10.75	0.13	1.2
ASE	8.50	4.25	Dataram Corp. (H)	8.38	0.25	3.1
NYS	27.38	14.75	EMC Corp.	21.75	1.75	8.8
OTC	28.50	7.88	Emulex Corp.	26.88	1.13	4.4
OTC	19.00	11.25	Evans & Sutherland (H)	18.50	0.00	0.0
OTC	24.00	11.75	Exabyte	16.25	0.75	4.8
OTC	4.75	1.88	Intelligent Info. Systems	3.75	0.56	17.6
OTC	30.00	2.38	Iomega Corp.	27.88	0.56	2.1
OTC	7.88	2.00	IPL Systems Inc.	7.25	-0.19	-2.5
OTC	69.63	22.00	Komag Inc.	67.75	2.75	4.2
OTC	7.25	2.63	Maxtor Corp.	4.81	0.06	1.3
OTC	11.50	4.00	Micropolis Corp.	6.75	0.50	8.0
OTC	23.75	8.75	Pinnacle Micro Inc. (H)	22.00	1.13	5.4
OTC	38.75	10.13	Printronix Inc.	29.00	3.75	14.9
NYS	10.75	4.00	QMS Inc.	5.13	0.75	17.1
OTC	27.63	13.75	Quantum Corp.	26.88	2.50	10.3
OTC	15.00	7.38	Radius Inc.	8.25	-0.88	-9.6
NYS	10.38	6.38	Recognition International	9.88	0.00	0.0
OTC	7.00	1.38	Rexon Inc.	2.50	0.75	42.9
OTC	48.38	22.88	Seagate Technology (H)	48.38	4.25	9.6
NYS	37.63	17.88	Storage Technology	29.50	0.38	1.3
NYS	52.38	31.13	Tektronix Inc.	48.13	2.00	4.3
NYS	126.38	90.63	Xerox Corp.	126.38	7.63	6.4
Services						**UP 2.78%**
OTC	27.00	14.38	American Mgmt. Systems	24.13	0.13	0.5
NYS	3.38	0.56	Anacomp Inc.	0.88	0.00	0.0
OTC	29.25	14.75	Analysts Int'l (H)	29.25	2.00	7.3
NYS	66.88	36.75	Auto Data Processing (H)	66.13	1.00	1.5
OTC	40.50	14.00	Cambridge Tech. Partners (H)	40.13	6.63	19.8
NYS	43.50	23.50	Cerioian Corp.	42.75	1.88	4.6
NYS	32.50	19.38	Comdisco Inc.	31.75	0.00	0.0
OTC	21.00	6.63	Computer Horizons	20.25	1.13	5.9
NYS	61.50	40.75	Computer Sciences	59.75	1.00	1.7
NYS	16.00	7.50	Computer Task Group	14.75	0.63	4.4
NYS	36.63	6.75	CompUSA Inc.	36.63	1.50	4.3
OTC	10.75	5.38	Control Data Systems Inc.	9.63	0.25	2.7
OTC	14.25	6.25	Egghead Discount Software	13.00	0.38	3.0
NYS	47.50	34.75	General Motors E (EDS)	46.13	-0.13	-0.3
OTC	15.25	6.88	Inacom Corp.	14.13	0.38	2.7
OTC	18.13	7.50	Intelligent Electronics	12.38	0.75	6.5
OTC	11.25	3.88	Merisel	6.25	-0.19	-2.9
OTC	15.88	8.50	Microage Inc.	12.63	0.25	2.0
OTC	40.00	21.13	Paychex	39.13	0.75	2.0
NYS	53.88	33.63	Policy Management Sys.	51.50	-0.25	-0.5
NYS	33.50	22.25	Reynolds and Reynolds	31.13	0.13	0.4
OTC	24.50	16.75	SEI Corp.	22.25	0.00	0.0
OTC	42.75	23.63	Shared Medical Systems	38.13	-1.00	-2.6
OTC	8.13	4.00	SHL Systemhouse	7.38	0.50	7.3
OTC	26.50	12.00	Software Spectrum Inc.	24.50	0.50	2.1
OTC	31.75	16.75	Sungard Data Systems	28.75	0.00	0.0

KEY: (H) = New annual high reached in period (L) = New annual low reached in period

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MVS gets bundles

CONTINUED FROM PAGE 1

into MVS. But industry sources said vital communications, systems programming and job scheduling software will be consolidated into a release of the operating system due out in the first half of 1996 (see chart). Other products should follow in future releases, the sources added.

Earlier this year, IBM announced plans to bundle MVS with client/server technology such as its LAN access software and the runtime version of its object environment. The strategy expands significantly on those initial bundling plans to make MVS more palatable to existing System/390 users and customers attracted to Unix systems today.

Share attendees briefed by IBM said the bundling should free up systems programmers to do more productive work than repetitive software installations. That is especially important in an era of sharply downsized mainframe operations staffs, they added.

"Technical staffs are better trained now, but they're smaller, and there's a lot more work to do," said Anthony Slusz, a senior systems specialist at ITT Hartford Life Co. in Hartford, Conn. "For our organization, whatever IBM can do on bundling will help us out."

"Depending on how you stagger things, you could spend your whole life installing [MVS-related] software," said Bill Choate, an operating systems analyst at Emory University in Atlanta. One of his employees "spends the majority of his time just doing that," added Choate, a member of Share's board of directors.

Attractive strategy

Charles Lickel, vice president of business plans and systems architecture at IBM's System/390 division in Poughkeepsie, N.Y., said MVS must become easier to order and install "if we want it to be a server operating system" that can compete against Unix and Windows NT.

Lickel said the bundling strategy is also geared toward making MVS more attractive to Unix software houses, which are being courted by IBM to support the System/390 platform. MVS pricing will likely increase because of the bundling, but the resulting cost should be lower than what users must now pay to get MVS and all of the separate products, he said.

John Young, an analyst at The Clipper Group, Inc., a mainframe-oriented consulting firm in Wellesley, Mass., said it is imperative that IBM make MVS "more comprehensible" to customers who could easily look elsewhere as Unix operating systems and Windows NT become more robust.

Turning MVS into "a drop-in operating system is nice for IBM's Top 100 accounts, but it's absolutely a requirement to stay in [smaller] shops," Young said. "If you don't make [buying and installing MVS] easier, people are just going to walk away from it."

All for one

The supporting software that will be bundled into MVS starting next year is expected to include the following products:

Product	Function
VTAM	Communications software that connects MVS applications to SNA or APPN networks
JES2	Job-entry scheduler for managing the flow of MVS processing tasks
TSO and TSO/Extensions	Software that handles system programming, application kickoffs and user log-ins
Error Recovery and Editing Program	Manages procedures for recovering from system errors

Frame relay

CONTINUED FROM PAGE 1

voice over MCI Communications Corp.'s frame-relay service.

Users can expect to pay roughly $6,500 for a four-port model of Micom's FrameRunner frame-relay access device; an eight-port model costs $8,500. One unit is needed at each site.

Sending voice over frame relay means data transmission will be throttled down during the voice call, but Micom's products minimize the performance drop.

In fact, several early users of Micom's equipment swear by it. "Micom's voice over frame relay is as good as voice over private lines," said James Shroads, director of information services at Transammonia, Inc., a chemical firm in New York. "There's absolutely no degradation."

"Users will have to get used to having to use equipment vendors others than router makers, which won't be a major nightmare," Heckart said. "In the long run, I think users are going to be pleasantly surprised by the quality of the voice calls."

Micom runs voice over frame relay by using "silence suppression," a capability that enables networking equipment to send bursts of data during silences in voice calls. Brief silences in conversation, including pauses between words, represent one-third of a telephone call, a Micom spokesman said.

Rivals ACT and Memotec confirmed plans to introduce in the next few weeks similar networking equipment that supports voice over frame relay but declined to comment further.

"We have a three-site frame-relay network ourselves, and 30% of our phone calls are between those three sites," said Heckart, who has written a book about frame relay. "We justified the network for data applications, but we can save over $300 a month [per site] by running voice over it."

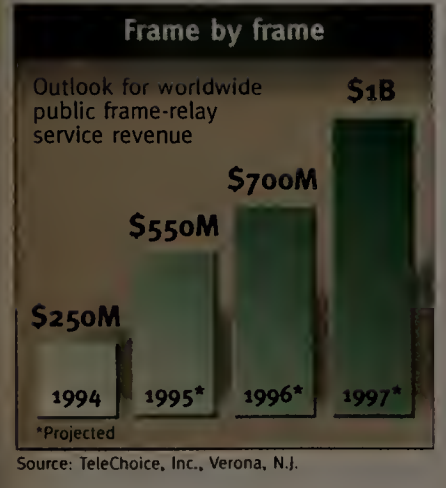
Up, up and away

Nationwide frame-relay service, which was first offered in March of 1991, is soaring, according to analysts.

If they snooze, they'll lose

Heckart stressed that most routers don't support voice over frame relay, which means users will need to use Micom, Memotec and ACT equipment instead of existing routers. She predicted router vendors will adjust their products if demand develops.

"Router vendors aren't dummies," Heckart said. If they start to lose business to these vendors, they'll start supporting voice over frame relay on their routers."



Source: TeleChoice, Inc., Verona, N.J.

Multinationals might get further benefit from European telecom deregulation. See page 54.

Oracle

CONTINUED FROM PAGE 1

ing, plans to add support for Internet mail and put a Web browser — either its own or one from partner Spyglass, Inc. — atop its Oracle Groupware product set, said Sohaib Abbasi, senior vice president of the tools group at the Redwood Shores, Calif.-based database company. Oracle currently has some of its groupware modules out (see chart, page 1).

The Web-enabled groupware strategy targets the growing number of users building internal Web sites.

Internal Web sites, or those within a company's own firewall, are attractive because they let users share data and applications regardless of the type of PC or workstation sitting on their desks, Abbasi said.

Internet shortcut

Oracle doesn't plan to rely solely on the Internet as a network platform for its groupware offering. However, it sees the ever-increasing corporate use of the Internet as a chance to bypass more established PC software players such as Lotus Development Corp. with Notes and Microsoft Corp. with its forthcoming Exchange Server, due to ship by year's end.

That is because "no one controls the operating system, the network or the end-user devices that access the Web," said Marc Benioff, vice president of client/server systems at Oracle. "That intrigues us."

Web-enabled groupware that is integrated with a reliable relational database, for example, Oracle7, could help the firm hijack some users away from Notes and Exchange, said Chris Le Tocq, an analyst at SoftTracks Software Research, a consultancy in Los Altos, Calif.

"They do have to do *something*," Le Tocq said, referring to Oracle's broken promise to deliver groupware before the end of last year.

Oracle originally revealed plans for a Notes rival two years ago, with shipment promised for mid- to late 1994. Oracle still has not delivered on key document management and workflow modules, citing "the usual delays" in creating complex software products [CW, March 4].

Lotus has announced Internet connections for Notes 4.0, which is due at the same time early next year. But Oracle Groupware is likely to have a leg up on Notes and Exchange because of its integration with the Oracle7 relational database, said Donald Brett, chief information officer at Detroit Edison Co. For Brett, the possibility of melding groupware, relational databases and the far-reaching Internet holds promise.

"A mesh of the capabilities of the two technologies could save us a lot of work," he said. For example, human resources information, technical manuals and other resources could be kept on-line.

Detroit Edison, which has beta-tested Oracle Groupware modules for several months, plans to launch a Web site by the end of the year.

Yet while few dispute Oracle's database prowess, the vendor lacks other skills crucial to groupware users, namely the ability to create and enhance a simple, powerful user interface, Le Tocq said.

"That's an open question that won't be answered until Oracle ships the product," he said.

Web work

Oracle plans to offer a set of development tools for building Web applications, or adding more Web features to Oracle Groupware, by the end of 1995. Oracle Groupware modules with Web support are due out early next year, Oracle said.

Divided camps

Oracle's plan comes as a war looms over which medium is better for sharing computing work: integrated, LAN-based products such as Notes or the World Wide Web [CW, Aug. 7].

One camp says the Web can't handle complicated, real-time team computing, such as application development projects, in part because of a lack of big bandwidth. The other side maintains that the Web is a less expensive, simpler way for workers to communicate.

—Kim S. Nash

Chip vendor's effort may result in less expensive ATM

There's a lot to like about Asynchronous Transfer Mode (ATM) — except the price.

Now, a little-known networking vendor in Santa Clara, Calif., is taking aim at that price. It plans to do for high-speed networking what RAID did for high-volume storage — lower its cost through the use of a redundant component.

MMC Networking has come up with a design that gets around ATM's usual need for a lot of expensive memory. It has also found a way to use less expensive chips as memory access buffers, the integrated circuits that move data from an incoming port to its exit line.

A 32-port ATM switch requires memory and a memory buffer chip at each junction of its incoming and outgoing lines. This results in 1,024 chip combinations. The expense of such a configuration is one reason ATM vendors build their switches in smaller units. As a result, ATM networks are typically a hierarchy of several small segments.

The Meta View

MMC plans to do for high-speed networking what RAID did for high-volume storage – lower its cost through the use of a redundant component.

Charles Babcock

On a mission

Prabhat Dubey, president of MMC, set out to clear these pricing barriers by concentrating memory in a common pool instead of distributing it. When it was distributed, each junction needed enough memory for peak throughput. By collecting memory in a pool, switch designers could play the odds that it was unlikely that all ports would operate at full capacity all the time and cut their memory expense to one-fifth of what it had been.

It is a sound theoretical idea, and MMC designers immediately found out why no one else had been able to do it. ATM moves data in units called cells, or defined packets of 53 bytes. Five bytes of the cell are header and destination information; 48 bytes are the data being transmitted.

Advancing 48 bytes of data in a stroke calls for a bus capable of transporting 384 bits, which in turn calls for a logic gateway (the memory access buffer) with 384 pins. In fact, Dubey says, the chip will have more than 500 pins after control, logic, power and numerous grounding pins are added to the design. Such a chip is a product of fat city, an oversize, custom-designed, bipolar logic with a price to match. The drawbacks offset the gains in less expensive memory.

MMC decided to attack the problem in two steps, Dubey says.

To illustrate, he moved his cup of coffee to the center of the table then told his listener to retrieve the coffee from its new location. MMC designers would find a way to move the 48 bytes of cell contents in one step, while sending a 5-byte header down a bus to signal the location of the cell to the receiver channel.

To move the data cell, Dubey's design team came up with an array of six chips. Each chip receives 32-bit units of the cell and moves them into memory. The 25-MHz chips can execute two moves in one clock cycle. Together they execute a dozen 32-bit moves in one cycle, and the cell's 48 bytes of data are written to memory in step with the timing cycle of ATM.

For the memory pool, MMC can use 20 nanosecond static RAMs at one-fourth the cost of 10 nanosecond static RAMs used in other ATM switches. And the memory access buffers are 208-pin chips that are relatively inexpensive to fabricate.

"This chip set can change things in the ATM market," says Ari Arjavalingam, an ATM analyst at Needham & Co. in New York.

MMC received a patent on this design last February, and CrossComm in Marlboro, Mass., has committed to using the MMC chip set in its next-generation ATM switches. Arjavalingam predicts it will cut the cost of end-user ATM connections, the weak link in the ATM network, to less than half. Currently, it would cost $2,200 to $2,500 for an ATM connection port and desktop adapter card. Using the MMC chip set could quickly drive that price down to $1,000 or less, he predicts.

"There's a certain elegance to their design," Arjavalingam says. "It's a good compromise between the complexity of chips needed to make a switch fabric and the number of chips required."

Babcock is *Computerworld*'s technical editor. His Internet address is cbabcock@cw.com.

How to contact *Computerworld* editors:

	Phone:	Fax:
Main office, Framingham, Mass.	(508) 879-0700	(508) 875-8931
Mid-Atlantic bureau, Rochelle Park, N.J.	(201) 587-0090	(201) 712-1808
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Inside Lines

Here's the smoke, where's the fire?

The snide refer to IBM Chairman Lou Gerstner as the Cookie Man, but he seems to have more of an appetite for software makers. The influential syndicated financial columnist Dan Dorfman said IBM made what amounts to a $4 billion bid for Novell last week. A former high-level Novell executive confirmed the report, but said Novell isn't biting. The company itself denied the rumor (IBM had no comment), and Wall Street reacted with the vigor of a dead fish.

Forget about detente

Thing are getting downright nasty between IBM and Microsoft. In a letter to his staff last week, Dan Lautenbach, vice president of IBM's Personal Software Products division, said Microsoft threatened to pull its sponsorship of the upcoming Windows Solutions Conference and Expo and rescind permission to use "Windows" in the conference title if Lee Reiswig — IBM's top OS/2 executive — delivered the show's final keynote speech. Show producer Softbank reportedly asked Reiswig to step aside and then offered him another, unacceptable, time slot. IBM then withdrew from the show. Softbank issued a statement saying it would be "thrilled" to have Reiswig as a speaker. As for Microsoft, it claimed there was no objection to Reiswig. "We thought it was a bit strange.... But if that's what IBM wants — to have a big presence at the show — fine with us," said Cameron Myhrvold, director of marketing for Microsoft's Developer Division. He also denied threatening Softbank.

Place your bets

The ever-busy Microsoft reportedly plans to develop and market an object relational database. Sources say the company is already recruiting management types for the project, which would compete with Oracle's next major release.

SAA-what?

IBM is expected to announce soon that it will take over development and support for Novell's NetWare for Systems Application Architecture, a LAN-to-mainframe gateway product, according to sources close to the vendors who requested anonymity. Novell likely will continue only to market the package.

Keeping the faith

The personal digital assistant (PDA) market may be limping along these days, but count Hewlett-Packard among those not giving up, sources say. An HP PDA based on Geoworks' Geos operating system is due to hit the market in late September or early October. Sources said the HP/Geos PDA will cost less than $500, support both keyboard and pen input and include a Type II PCMCIA card.

On the boardwalk

The Santa Cruz Operation, in which Microsoft owns a 14% stake, will tell users at its SCO Forum meeting this week about plans to step up its role as a PC-to-Unix integrator. SCO will introduce middleware designed to tie Windows clients with Unix servers from a variety of vendors. "Microsoft can't do it all," said SCO vice president Grover Righter. Maybe so, but Microsoft has the same idea. It has tapped Unix system vendors Digital and AT&T GIS to help it link Windows applications to Unix servers.

Glory days: A memorabilia display at the IBM-oriented Share user group's 40th anniversary conference in Orlando, Fla., last week evoked a simpler time when Big Blue and the IS department were securely on top of their respective worlds. The button exhibit offered some especially trenchant — if half-joking — truths from the heyday of the big-iron era. One well-faded button read, "I love IBM — I'm scared not to!" Noted another, "Users exist only to supply a test load for your system." Then there was the more risque "IBM can beat your Wang," which really calls to mind a bygone day. To get in touch with Computerworld *about news items or tips, call our 24-hour voice-mail tip line at (508) 820-8555 or our toll-free number at (800) 343-6474. News editor Maryfran Johnson can be reached by phone at (508) 820-8179 or via the Internet at mjohnson@cw.com.*

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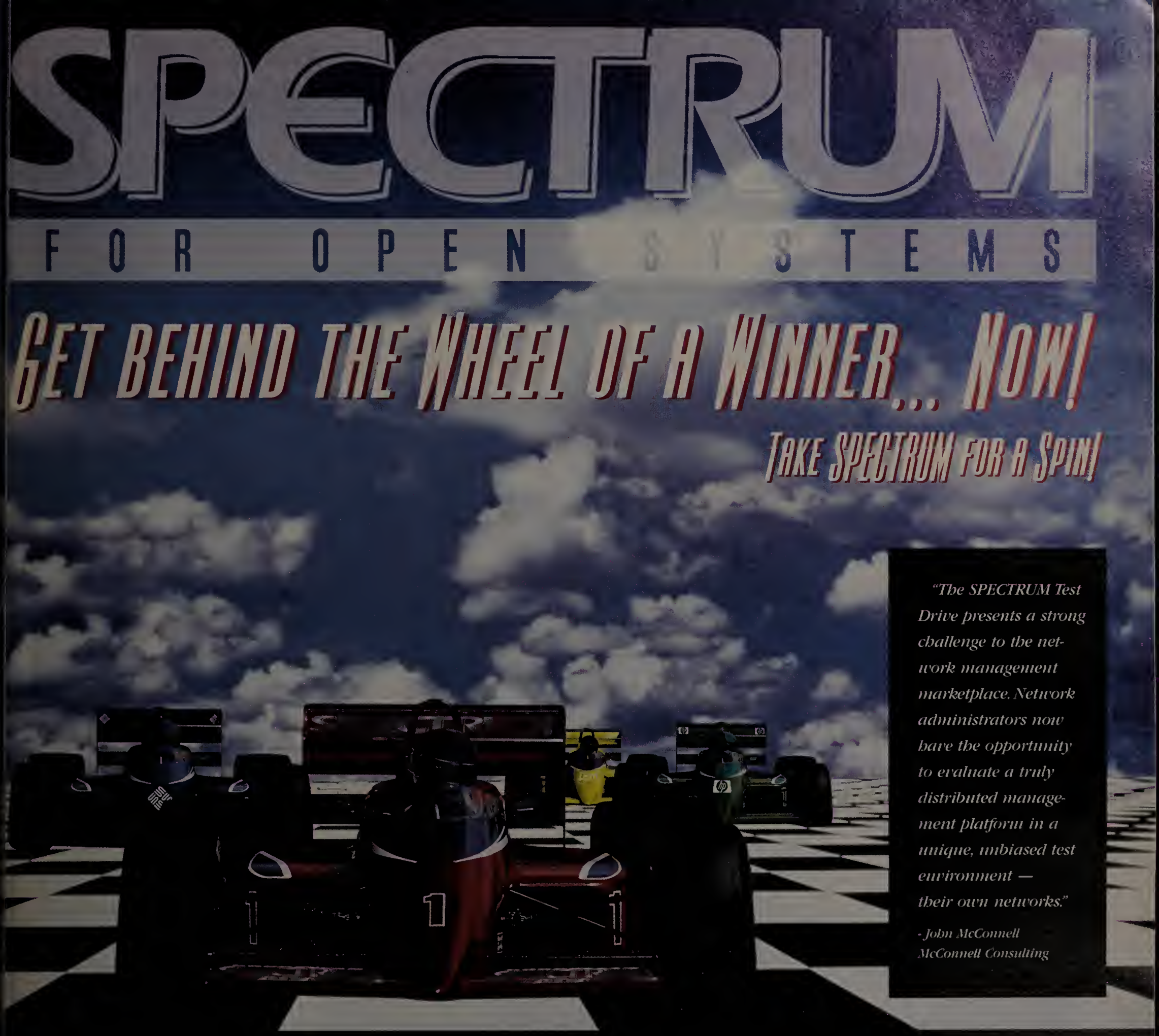

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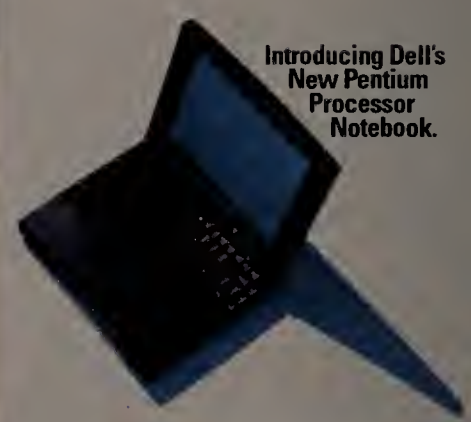

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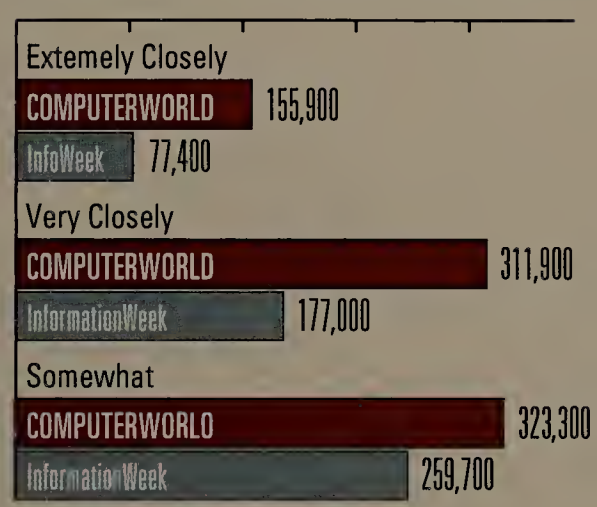

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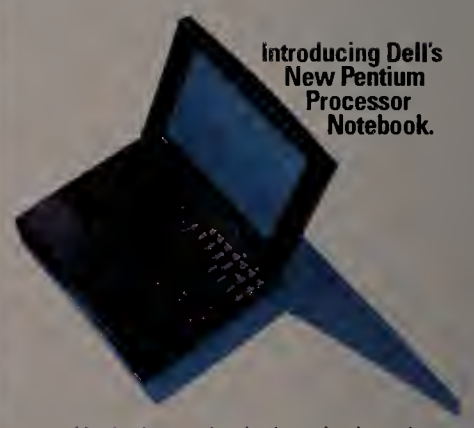

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